
PREFACE

Shortly after the September 11, 2001, attacks, the presidents of the National Academy of Sciences, the National Academy of Engineering, and the Institute of Medicine in the United States initiated a study of science and technology for countering terrorism. Lewis Branscomb, a co-editor of this book, and Richard Klausner were appointed co-chairs of the committee. The study team included more than 100 scientific and technical authors and 46 reviewers. Within seven months, the committee produced *Making the Nation Safer: Science and Technology for Countering Terrorism*, a report that focused on research and development strategies, describing actions to reduce immediate risks using existing knowledge and technologies and research to reduce future risks through the development of new capabilities. Many of the report's recommendations for research and development priorities were later incorporated into the science and technology strategy for the Department of Homeland Security.

Making the Nation Safer also highlighted a number of policy issues to be addressed for the nation's safety and security to benefit fully from any technical successes. Foremost among these policy issues was the role of private action in reducing public vulnerability. Then as now, most of the likely targets of terrorist attack are owned by private-sector firms. Furthermore, the severity of any attack (or, for that matter, of any major natural disaster) may be seriously aggravated by the disruption of critical services such as energy and water – services that are also mostly provided by private-sector firms. *Making the Nation Safer* addresses this concern in the following terms:

Economic systems, like ecological systems, tend to become less resilient (more prone to failure when strongly perturbed) as they become more efficient, so our infrastructures are vulnerable to local disruptions, which could lead to widespread or catastrophic failures. In addition, the high level of

inter-connectedness of these systems means that the abuse, destruction, or interruption of any one of them quickly affects the others. As a result, the whole society is vulnerable, with the welfare and even lives of significant portions of the population placed at risk.

While the U.S. government has, in the past five years, advanced an agenda to promote science and technology for counterterrorism, it has done little to provide the firms that ultimately assure the delivery of critical services with incentives to invest in reducing public vulnerability.

This book represents an attempt to seriously address the private role in public security. In particular, what factors affect the investment decisions of the firms that provide critical infrastructure services – those that assure the social and economic continuity of nations and groups of nations?

The work in this volume draws from the efforts by more than half a dozen research teams, each of which has long been active in research on risks and consequences of terrorism and other disasters – particularly as they affect the continuity of the critical infrastructure services. Among these teams are those represented by the editors: George Mason University’s School of Public Policy, Harvard’s John F. Kennedy School of Government, and the Wharton School at the University of Pennsylvania. Researchers at George Mason’s Critical Infrastructure Protection Program have since 2003 advanced policy-relevant work concerning infrastructure vulnerabilities and strategies to ensure the provision of critical services. The Belfer Center for Science and International Affairs at Harvard’s Kennedy School has also applied longstanding contributions to the study of terrorism and national security to the study of public–private partnerships in homeland security. For more than 20 years, the Risk Management and Decision Processes Center at the Wharton School has also been furthering knowledge about the nature of extreme events from terrorism, technological failure, or natural hazards and the contribution that markets and governments can make to address the new large-scale dimension associated with these emerging catastrophic risks.

The efforts of these research teams complemented those of other leading teams at a variety of institutions in the United States and abroad, notably Carnegie Mellon University, Columbia University, the Lawrence Livermore National Laboratory, Mills College, RAND Corporation, the University of California at Berkeley, and the École Polytechnique in Paris.

In the winter of 2004, George Mason University’s Critical Infrastructure Protection Project funded a project titled “Private Efficiency, Public Vulnerability: Developing Sustainable Strategies for Protecting Critical Infrastructure.” Philip Auerswald from George Mason and Lewis Branscomb from Harvard served as lead investigators of the project. Its centerpiece was a workshop held at

Harvard's Kennedy School, May 27–28, 2004. A premise of the project was that the threat to critical infrastructure from terrorist attacks is best addressed as part of an overall strategy for national safety and security. While each category of risk has specific characteristics, the mitigation of risk from terrorist attack is inherently linked to the mitigation of risk from natural and technological disasters, and from service failures due to human error.

Following the workshop, the lead investigators undertook to produce a research volume that would organize the multiple perspectives offered at the workshop. The goal was to provide senior executives, policymakers, and citizens with a systematic analysis of issues and potential actions. Erwann Michel-Kerjan from the Wharton School and Todd M. La Porte of George Mason joined Auerwald and Branscomb as author-editors of the volume. To provide additional balance and depth to the collection of papers, the author-editors soon broadened the list of invited contributors to include academics and private-sector leaders who had not originally participated in the May 2004 workshop.

The contributors to this volume are among the most respected individuals in this field. Each draws on his own experience from business, government, and research institutions (responsibility for the content of this book, of course, lies with them, not with the institutions with which they are identified). While the contributed chapters represent the disparate views of the individual expert authors, all advance the collective objective of providing readers with a comprehensive and thoughtful analysis of the role of private firms in ensuring public security. Despite the complexity of the subject matter, a surprising degree of consensus emerged among the authors and editors concerning core policy-relevant issues. These are summarized in the book's conclusion.

In addition to being of immediate policy relevance, we believe this book will contribute to establishing a new field of interdisciplinary study on the topic of "security externalities," addressing, among other topics, the risks, physical and financial vulnerability, and organizational resilience of critical infrastructure services in times of disaster. Indeed, as events in this young century have regrettably illustrated, the experience of disaster in various forms may become more the rule that guides public policy and business strategy than the exception that is ignored. To the extent that this is the case, understanding of security externalities may emerge in this century as a major domain of study, just as environmental externalities did in the previous century.

The book is divided into six parts. The first and last parts comprise an introduction to the issues and a summary of its conclusions, both authored by the four editors. The parts in between address five linked challenges, each necessary but not sufficient in the overall effort to mobilize private action to reduce public vulnerability: (1) recognizing infrastructure vulnerability, (2)

managing high reliability organizations, (3) securing interdependent networks, (4) creating markets, and (5) building trust. Each of these sections is introduced by a chapter, written by the editors, that places the rest of the chapters in the section in the context of the overall analytic flow of the book.

This volume at once addresses a vitally important policy issue and contributes to developing a fundamentally new domain of academic inquiry. We hope readers will appreciate the various but complementary perspectives offered and will be prompted to further consider how routine private decisions can represent not only the seeds of disaster, but also the roots of response.