

DISASTER RESPONSE AND RECOVERY

Strategies and Tactics for Resilience

Second Edition



David A. McEntire

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Disaster Response and Recovery

Disaster Response and Recovery: Strategies and Tactics for Resilience

SECOND EDITION

David A. McEntire, PhD

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WILEY

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For emergency management students and professionals everywhere

CONTENTS

About the Author	xiv
Foreword	xvi
Preface	xviii
Acknowledgments	xxi
1. Knowing What to Expect	1
1.1 The Occurrence of Disasters	2
1.1.1 Important Concepts	3
1.1.2 Preview of Disaster Response and Recovery	6
1.2 Types of Hazards	7
1.2.1 Natural Hazards	8
1.2.2 Atmospheric Hazards	8
1.2.3 Geological Hazards	13
1.2.4 Hydrologic Hazards	14
1.2.5 Seismic and Volcanic Hazards	16
1.2.6 Wildfire Hazards	19
1.2.7 Biological Hazards	19
1.3 Technological Hazards	20
1.3.1 Industrial Hazards	20
1.3.2 Environmental Hazards	21
1.3.3 Nuclear Hazards	22
1.3.4 Structural Collapse Hazards	22
1.3.5 Computer Hazards	23
1.3.6 Transportation Hazards	24
1.4 Civil/Conflict Hazards	26
1.4.1 Mass Shootings	26
1.4.2 Panic Flight	27
1.4.3 Riots	28
1.4.4 Terrorism	29
1.4.5 War	30
1.5 The Complexity and Impact of Disasters	31
1.5.1 The Nature of Disasters	32
1.5.2 Changes Associated with Disasters	33
1.5.3 The Need for Response and Recovery Operations	34
2. Understanding the Actors	44
2.1 The Public Sector	45
2.1.1 Local Government	45
2.1.2 County and Regional Governments	48
2.1.3 State Government	49
2.1.4 Federal Government	52
2.1.5 Tribal Government	56
2.2 The Private Sector	58
2.2.1 Emergency and Long-Term Medical Care	58
2.2.2 Sheltering and Housing	59

	2.2.3	Media Reporting	59
	2.2.4	Volunteers and Donations	59
	2.2.5	Insurance Settlements	59
	2.2.6	Utility Restoration and Community Reconstruction . .	60
	2.2.7	Business Continuity	61
	2.2.8	Transportation	61
	2.2.9	Vending of Goods and Services	62
2.3		The Nonprofit Sector	62
	2.3.1	The Red Cross	63
	2.3.2	Faith-Based Organizations	64
	2.3.3	Community Groups	65
2.4		Citizen and Emergent Groups	66
2.5		Working with Different Groups and the Whole Community . . .	69
3.		Anticipating Human Behavior in Disasters	79
	3.1	The Impact of Hollywood and The Media	80
		3.1.1 Hollywood	80
		3.1.2 The Media	81
	3.2	Research on Myths	82
	3.3	Evidence of Exaggeration	87
	3.4	Realities about Response and Recovery	91
	3.5	The Importance of Understanding Behavior Correctly	96
4.		Recognizing Alternative Management Approaches	104
	4.1	The Traditional Model	105
		4.1.1 Features of the Traditional Model	107
		4.1.2 Strengths of Traditional Model	109
		4.1.3 Weaknesses of Traditional Model	112
	4.2	The Professional Model	114
		4.2.1 Features of the Professional Model	115
		4.2.2 Strengths of the Professional Model	116
		4.2.3 Weaknesses of Professional Model	118
	4.3	Comparison of The Models	120
5.		Implementing Initial Response Measures	127
	5.1	Hazard Detection	128
		5.1.1 Initial Steps	131
	5.2	Issuing Warnings	135
		5.2.1 Types of Warning Systems	137
		5.2.2 Warning Considerations	140
	5.3	Evacuation	142
		5.3.1 Means of Evacuation	143
		5.3.2 Evacuation Behavior	144
		5.3.3 Evacuation Considerations	146
		5.3.4 Evacuation Procedures	148
	5.4	Sheltering	149
		5.4.1 Sheltering Types	150
		5.4.2 Shelter Use and Characteristics	151
		5.4.3 Working with Others to Establish and Manage Shelters	152

6.	Caring for the Injured, Dead, and Distraught	163
6.1	Search and Rescue Operations	164
6.1.1	Types of SAR.	164
6.1.2	Human Behavior in SAR Operations.	165
6.1.3	Issues to Consider When Carrying Out SAR.	166
6.1.4	Professional USAR Teams	168
6.1.5	Conducting SAR Operations.	170
6.2	Emergency Medical Care and Triage	173
6.2.1	Treating the Injured	174
6.2.2	Triage	177
6.2.3	Disaster Medical Assistance Teams	179
6.3	Mass Fatality Management	181
6.3.1	Mass Fatality Incidents and Their Challenges	183
6.3.2	Responding to Mass Fatality Incidents	184
6.3.3	Disaster Mortuary Operational Response Teams	186
6.4	Stress Management	189
6.4.1	Vulnerability to PTSD/CIS.	189
6.4.2	Common Signs of PTSD/CIS.	191
6.4.3	Overcoming PTSD/CIS.	191
6.4.4	The Merit of Defusings and Debriefings	194
7.	Managing Public Information, Donations, and Volunteers	204
7.1	The Media and Disasters.	205
7.1.1	Types of Media	205
7.1.2	Challenges Associated with the Media	207
7.1.3	Strategies for Working with the Media	210
7.2	Dealing with Donations	213
7.2.1	Challenges Resulting from Donations	215
7.2.2	Recommendations for Donations Management.	220
7.3	Volunteer Management	223
7.3.1	Difficulties Associated with Volunteers	224
7.3.2	Strategies for Volunteer Management	226
7.3.3	Advantages of Volunteer Management.	228
8.	Moving Beyond Immediate Needs	236
8.1	Assessing Damages	237
8.1.1	Types of Damage Assessment	239
8.1.2	Methods of Conducting Damage Assessment	240
8.2	Challenges in Damage Assessment	242
8.2.1	Accuracy.	242
8.2.2	Working with Others	243
8.2.3	Access and Safety	243
8.3	Damage Assessment Procedures	245
8.3.1	Preassessment Activities	245
8.3.2	Assessment Activities	245
8.4	Disaster Declarations.	248
8.4.1	Difficulties Associated with the Process.	249
8.4.2	Factors Determining Declarations.	250
8.4.3	Other Unique Requirements.	251

- 8.5 Debris Produced by Disasters 252
 - 8.5.1 Types of Debris 252
 - 8.5.2 Debris Management Challenges 255
- 8.6 Dealing with Debris Effectively 257
 - 8.6.1 Storage Locations and the Environment 258
 - 8.6.2 Epa Recommendations for Improving Debris Management 260
- 8.7 Regulations and Other Considerations 261
 - 8.7.1 Reducing Expenses 262
 - 8.7.2 Preventing Fraud 262
- 9. Promoting Recovery and Mitigation. 272**
 - 9.1 Disaster Impacts and Disaster Assistance. 273
 - 9.2 Types of IA 275
 - 9.2.1 Loans and Grants 276
 - 9.2.2 Services 277
 - 9.2.3 Benefits. 278
 - 9.3 Obtaining IA. 279
 - 9.3.1 National Processing Service Center (NPSC) 279
 - 9.3.2 Disaster Recovery Center (DRC). 280
 - 9.4 Categories of PA 284
 - 9.4.1 Emergency Assistance 284
 - 9.4.2 Permanent Assistance 285
 - 9.5 Obtaining PA 286
 - 9.6 Important Issues for Recovery. 288
 - 9.6.1 Minimizing Fraud. 289
 - 9.6.2 Protecting the Environment 289
 - 9.6.3 Preserving Historic Buildings 290
 - 9.6.4 Mitigating Future Disasters 291
 - 9.7 The Potential for Disagreement 296
 - 9.8 Pressing for Change 297
 - 9.8.1 Lessons from the Loma Prieta Earthquake 298
- 10. Overcoming Typical Challenges. 307**
 - 10.1 Communications and Coordination 308
 - 10.1.1 The Importance of Communication and Coordination 309
 - 10.1.2 Communication and Coordination Barriers 309
 - 10.1.3 Enhancing Communication 310
 - 10.1.4 Improving Coordination. 311
 - 10.2 Decision Making. 313
 - 10.2.1 Overcoming Decision Errors. 316
 - 10.3 Transportation Issues and Logistics. 317
 - 10.3.1 Dealing with Transportation Problems 318
 - 10.3.2 Logistics in Disasters. 319
 - 10.4 Special Populations. 320
 - 10.4.1 Gender 322
 - 10.4.2 Race and Ethnic Groups 322
 - 10.4.3 The Poor. 324

10.4.4	Tourists	325
10.4.5	The Elderly	325
10.4.6	Children	325
10.4.7	The Disabled	325
10.4.8	Other Special Needs Groups	326
10.4.9	Meeting the Needs of Special Populations	327
10.5	Politics	328
10.5.1	Overcoming Political Problems	329
10.6	Legal Concerns	331
10.6.1	Disasters and Law	331
10.6.2	Constitutional Rights	333
10.6.3	Negligence	333
10.6.4	Minimizing Liability	334
10.7	Record Keeping	335
10.7.1	Record Keeping Problems	336
10.7.2	Keeping Accurate Records	337
11.	Harnessing Technology and Organization	348
11.1	The Importance of Technology	349
11.2	Communication Equipment and Interoperability	351
11.2.1	Trunked Radio Systems	352
11.2.2	The Internet	353
11.2.3	Voice over Internet Protocol and Other Equipment	353
11.2.4	The ACU-1000	353
11.2.5	Interoperability	354
11.3	Decision Support Systems (DSSs)	354
11.4	GIS	357
11.5	Managing Disasters at the Local Level	359
11.5.1	ICS	359
11.5.2	Principles of Incident Command	360
11.5.3	Strengths and Weaknesses of Incident Command	363
11.5.4	EOC	365
11.5.5	Characteristics of an EOC	365
11.5.6	Challenges Facing EOCs	367
11.5.7	Using EOCs	368
11.5.8	Comparison of ICS and EOCs	368
11.5.9	Memorandums of Understanding and Mutual Aid Agreements	369
11.6	Managing Disasters at the State Level	370
11.6.1	SEMS	370
11.6.2	EMAC	371
11.7	Managing Disasters on a Federal Level	373
11.7.1	NIMS	373
11.7.2	Goals of NIMS	374
11.7.3	Principles of NIMS	375
11.7.4	Strengths and Weaknesses of NIMS	377
11.7.5	NRF	378

	11.7.6	ESFs in the NRF	379
	11.7.7	The National Disaster Recovery Framework	382
	11.7.8	Recovery Support Functions in the NDRF	384
12.		Foreseeing the Future	394
	12.1	Disasters on the Rise	395
	12.2	Understanding Natural Disasters	398
	12.2.1	Responding to a Natural Disaster	399
	12.3	Understanding Technological Disasters	405
	12.3.1	Responding to HazMat Incidents	406
	12.4	Understanding Acts of Violence	409
	12.4.1	Responding to Acts of Violence	409
	12.5	Understanding Terrorism	412
	12.5.1	Responding to Terrorist Disasters	413
	12.5.2	Protecting First Responders	416
	12.5.3	Protecting Evidence	417
	12.5.4	Relying on Other Organizations	418
	12.6	Insufficiently Recognized Hazards	421
	12.6.1	Environmental Degradation, Global Warning, and Climate Change	421
	12.6.2	Pole Reversals	423
	12.6.3	Asteroid Strikes	424
	12.6.4	Biological Threats	426
	12.6.5	Computer/Information Technology Hazards	430
	12.6.6	Responding to Computer/Information Technology Disasters	431
	12.7	Increased Vulnerability	432
	12.7.1	Persistent Poverty	433
	12.7.2	Growing Population and Urbanization	433
	12.7.3	Increased Diversity	434
	12.7.4	Further Industrialization	434
	12.7.5	Internationalization	435
	12.7.6	Improper Land Use and Construction	436
	12.7.7	Weak Emergency Management Institutions	436
	12.7.8	Other Factors	437
13.		Enhancing Disaster Resilience	450
	13.1	Preparing Your Community	451
	13.1.1	Creating an Ordinance	452
	13.1.2	Establishing a Preparedness Council	452
	13.2	Acquiring Financial Resources	455
	13.2.1	Resource Lists	455
	13.2.2	Annual Budgets	455
	13.2.3	Grants	456
	13.2.4	Applying for and Managing Grants	457
	13.3	Establishing an EOC	458
	13.4	Hazard and Vulnerability Assessment	460
	13.5	Writing an EOP	461
	13.6	First Responder and Organizational Training	463

13.7	Disaster Exercises	464
13.7.1	Types of Exercises	464
13.7.2	Managing Exercises.	465
13.7.3	Exercise Participants and Other Considerations	466
13.8	Public Education.	467
13.9	Spontaneous Planning, Improvisation, Creativity, and Flexibility	469
13.10	Leadership and Professionalism	474
13.10.1	Becoming a Professional Emergency Manager	476
	Bibliography	487
	Index	528

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Dr. McEntire's academic interests include emergency management theory, international disasters, community preparedness, response coordination, and vulnerability reduction. He has received several grants—funded by the Natural Hazards Center, the National Science Foundation, and other sources—that allowed him to conduct research in Peru, the Dominican Republic, Texas, New York, California, and Haiti.

Dr. McEntire is the author or editor of several books including *Introduction to Homeland Security* (Wiley), *Disciplines, Disasters and Emergency Management* (Charles C. Thomas), and *Comparative Emergency Management* (FEMA). His research has also been published in *Public Administration Review*, the *Australian Journal of Emergency Management, Disasters*, the *International Journal of Mass Emergencies and Disasters*, *Journal of Emergency Management*, *Journal of the Environment and Sustainable Development*, *Sustainable Communities Review*, *International Journal of Emergency Management*, *Towson Journal of International Affairs*, *Journal of the American Society of Professional Emergency Planners*, and the *Journal of International and Public Affairs*. His articles in *Disaster Prevention and Management* have received Highly Commended and Outstanding Paper awards.

Dr. McEntire completed an instructor guide on disaster response operations for the Federal Emergency Management Agency (FEMA). He has also published chapters in the *Handbook of Disaster Research* (Springer), the *Handbook of Disaster Management* (CRC Press), *Emergency Management: Principles and Practices for Local Government* (ICMA), *Critical Issues in Homeland Security* (Westview Press), *Handbook of Emergency Response* (CRC Press), *Preparedness and Response for Catastrophic Events* (CRC Press), and *Critical Issues in Disaster Science and Management* (FEMA).

Dr. McEntire received grants to conduct terrorism-response training for FEMA in Arkansas and Oklahoma. He has been a contributing author for a study of Texas Homeland Security Preparedness for the Century Foundation as well as three IQ reports for the International City/County Management Association. McEntire has presented papers in Mexico and Norway, at the National Science Foundation, at the National Academy of Sciences, and at the Higher Education Conference at FEMA's Emergency Management Institute in Emmitsburg, Maryland.

He is a member of Congressman Burgess' Homeland Security Advisory Board, FEMA Region VI Advisory Board, ICMA's Advisory Board, and the Fire Protection Publications Advisory Board. He has reviewed books for several publishers and is on the editorial staff for the *Journal of Emergency Management*.

Prior to coming to the University of North Texas, he attended the Graduate School of International Studies at the University of Denver. While pursuing his degree, he worked for the International and Emergency Services Departments at the American Red Cross.

Dr. McEntire was recognized as the 2010 Dr. B. Wayne Blanchard Award Recipient for Academic Excellence in Emergency Management Higher Education.

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FOREWORD

Listen to the voices of family members. Listen to them describe the fear they felt and the protective actions they took just prior to their home being ripped apart by the tornado. When? Perhaps it was May, 2014. Perhaps it was a year or two before in Missouri. Or maybe it was Alabama or Tennessee. The locations and dates are less important than the fact that researchers were there to record their experiences and carefully juxtapose them with those of others. And collectively they are added to the scientific knowledge base about disaster response and recovery.

Dr. David A. McEntire has assessed and integrated these types of research findings from hurricanes like Katrina and, more recently, Sandy. We now marvel at the opening of the 9/11 museum dedicated to those who died and were injured during those terrible attacks. This structure, like so many others around the country, stands as a testament to the resilience of our nation, our national character. And as we hear of raging wildfires in California, miners dying again in places like Turkey, or those still struggling all these years after the destruction brought to Haiti, we are reminded again of why *Disaster Response and Recovery* are so important—so essential to resilience.

For decades, a slowly accumulating knowledge base was being constructed by scholars within numerous academic disciplines, especially sociology, geography, political science, and public administration. And today, those charged with the responsibility of preparing for, responding to, recovering from, and mitigating future disasters, explicitly recognize the need to transfer this knowledge base into their rapidly emerging profession.

The second edition of this outstanding book will assist in enhancing the resilience of communities as it brings this knowledge base to those of the front lines. Updated examples across the gamut of recent disasters, including earthquakes, hurricanes, tornadoes, wildfires and the like, will assist emergency managers, both those practicing and those preparing to enter the profession. Dr. McEntire outlines specific strategies and tactics for guiding the required interagency coordination that forms the very core of any disaster response. He skillfully takes the reader through both the horizontal and vertical layers of community organizations that link local jurisdictions to the resources of the state and federal governments. With this in-depth, but highly readable presentation of these and related topics, the entire profession may attain enhanced levels of competence and legitimacy.

Dr. McEntire directed the highly regarded emergency management program at the University of North Texas for several years. There he successfully blended the methods and theories of the academy with the

needs of those working in local communities both in government agencies and in private organizations. Through his initial doctoral studies at the University of Denver, his superb work at North Texas, and numerous FEMA funded projects designed to assist other emergency management faculty worldwide, he has brought the perfect blend of experiences to this text. Self-evaluations are encouraged within each chapter; these are facilitated with careful specification of key concepts and lessons learned.

As such, this updated second edition of an excellent text will be an invaluable resource for all who practice this profession. They, like the public they seek to protect, are indebted to Dr. McEntire for this unique contribution.

Thomas E. Drabek

John Evans Professor, Emeritus

Department of Sociology and Criminology

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PREFACE

There is a growing sense among scholars and practitioners that greater emphasis needs to be placed on prevention and mitigation activities in the increasingly important profession of emergency management. Recurring hazards, new threats, rising losses, and further vulnerability all lead to the inescapable conclusion that a proactive approach to disasters is undeniably warranted.

At the same time, it is also necessary to recognize that response and recovery operations will always be required—to some degree or another—after earthquakes, hazardous materials spills, or terrorist attacks. Furthermore, as the reaction to Hurricane Katrina illustrates, there is ample room for improvement in how we deal with disasters. At least some of the mistakes made in New Orleans could have been avoided if the extensive disaster literature had been heeded by politicians, public servants, corporations, nonprofit agencies, and citizens alike. In addition, there is no doubt that postdisaster functions also have an immediate or long-term impact on the protection of life, property, and the environment as well as the minimization of human suffering and social disruption.

For these reasons, *Disaster Response and Recovery: Strategies and Tactics for Resilience* has been written. Its goal is to integrate the lessons provided by both researchers and professionals, updating the field with current studies and practical guidelines. Rather than address these reactive phases as if they were the only responsibilities of today's emergency managers, this book attempts to illustrate that successful warning, evacuation, and other disaster functions require careful implementation as well as advanced preparedness measures. Recovery likewise provides a prime opportunity to implement change, thereby reducing the probability and consequences of future disasters.

Of course, no book can provide sufficient or fail-proof ideas on how to react successfully to the complexities of today's disasters, and the reader should not consider the information in this text to be the best or only way to respond to or recover from deadly, destructive, and disruptive events. In spite of this fact, it is hoped that this volume will be of benefit to students, emergency managers, and others interested or involved in disaster management.

In order to meet these goals, *Disaster Response and Recovery* provides a thorough review of the challenges confronting emergency managers (and others) after disasters and discusses recommendations for their resolution.

- ▲ Chapter 1 shares background information about disasters, emergency management, and types of hazards and their interaction. Chapter 1 likewise discusses the consequences of disasters so you may know what to expect in their aftermath.

- ▲ Chapter 2 helps you recognize the large number of individuals and agencies that participate in response and recovery operations. This includes public servants, government departments, private and nonprofit organizations, and citizen volunteers.
- ▲ Chapter 3 covers human behavior in time of collective stress. It challenges widely held views and offers a more accurate view of disaster behavior.
- ▲ Chapter 4 identifies two theoretical approaches to the management of disasters. The advantages and disadvantages of the traditional and professional models are also explored.
- ▲ Chapter 5 mentions how the initial steps of hazard detection, warning, evacuation, and sheltering may protect people's lives.
- ▲ Chapter 6 discusses several disaster functions including search and rescue, emergency medical care, mass fatality management, and stress counseling. It describes how best to care for those who have been affected by disasters.
- ▲ Chapter 7 explains what can be done to successfully deal with the media, donations, and volunteers after a disaster. It will help you know how to manage public relations and community resources.
- ▲ At this point, the book transitions from response to recovery. Damage assessment, disaster declarations, and debris management are the topics covered in Chapter 8.
- ▲ In Chapter 9, the process of recovery is investigated along with its relation to mitigation. The types of disaster assistance programs are uncovered along with ways to reduce vulnerability.
- ▲ Typical problems during response and recovery operations are exposed in Chapter 10. The difficulties associated with communication, coordination, decision making, transportation, politics, special populations, legal issues, and record keeping are explained to help you fulfill your obligations as an emergency manager.
- ▲ Chapter 11 points out that technology and organization will improve disaster management and coordination among pertinent actors.
- ▲ Chapter 12 helps you understand the challenges of the future by looking at the lessons of prior disasters and the nature of emerging threats.
- ▲ The final chapter of the book focuses on how to develop disaster resilience. It underscores the value of preparedness, spontaneous planning, improvisation, leadership, and professionalism for you as an emergency manager.

Learning and Teaching Aids

While reading each of the chapters, you will find helpful aids whether you are a student or an instructor.

Starting Point/Pretest: This assessment tool is an online test delivered through the book's companion web site. It enables you to focus reading comprehension on the areas where you are weakest.

“What You’ll Learn...” and “After Studying This Chapter...”: These bulleted lists describe the topics to be covered in each chapter.

Goals and Outcomes: This bulleted list makes explicit the learning objectives for each chapter.

For Example boxes: Real-world cases or situations that illustrate the central points of each section of the chapter.

Self Check Questions: These inquiries help the student review the material presented in each section of the chapter before continuing on with the remainder of the text.

Key Terms: A list of major concepts, including definitions, is provided at the end of each chapter.

Summary Questions: True/false or multiple choice questions that capture the main points of each chapter to test student mastery of key issues and content.

Review Questions: Short-answer questions that remind the student of the central concepts and recommendations covered in each section of the chapter.

Applying This Chapter Questions: Short-answer questions that invite the student to consider new situations and how they would deal with alternative scenarios.

You Try It!: Open-ended questions that allow the students to go beyond the information presented in the text and examine how they would react to real-world experiences.

Assess Your Understanding/Post-test: This final test for the chapter is also online in the text's web site. It repeats the initial test questions in order to illustrate achievement made while reading the chapter.

ACKNOWLEDGMENTS

Appreciation is expressed to several organizations and individuals that have helped significantly in the development of *Disaster Response and Recovery*. Although I alone am responsible for the content of this book, I am indebted first and foremost to the Federal Emergency Management Agency for a grant that made much of the research for this text possible. Gratitude is also conveyed to Wayne Blanchard, the former FEMA Higher Education Program Manager, for his ideas and insight regarding the theoretical and practical nature of postdisaster emergency management operations.

Special recognition is also warranted for the contributions of Siddik Ekici, Sarah Mathis, and Kristina Cramb, three graduate students in the Department of Public Administration at the University of North Texas. These dedicated research assistants eagerly assembled additional information and materials that were omitted during the initial literature review search. They also provided helpful case studies and worked on the extensive bibliography for this book.

I am also thankful for the knowledge and expertise of several scholars and practitioners that provided useful recommendations on earlier drafts of the book. These reviewers included Danny Peterson (Arizona State University), Phil Politano (Onondaga Community College), James Richardson (San Antonio Community College), William L. Waugh Jr. (Georgia State University), Cherlyn Wilhelmsen (University of Idaho), and Stacy Lynn Willet (University of Akron). The constructive advice of Gregg Dawson, Steve Reddish, Leland Baker, and other professional emergency managers is likewise noted.

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Finally, Wiley's staff, including Karyn Drews, Laura Town, and Jorkill Almanza, and Project Manager, Sandeep Kumar of SPi Global deserve credit for their time-consuming preparation of this manuscript for publication. While every effort has been taken to produce an accurate portrayal of response and recovery activities and to incorporate appropriate citations, it is possible that mistakes or errors remain present. Should this be the case, the reader is encouraged to share thoughts on the book with the author.

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1

KNOWING WHAT TO EXPECT

Hazards, Vulnerability, and Disasters

Starting Point

Pretest to assess your knowledge on hazards, vulnerability, and disasters.
Determine where you need to concentrate your effort.

What You'll Learn in This Chapter

- ▲ Differences between accidents, emergencies, and disasters
- ▲ General emergency management responsibilities
- ▲ Types of natural, technological, and anthropogenic hazards
- ▲ The interaction of hazards and vulnerability
- ▲ The nature and impact of disasters
- ▲ The need for response and recovery operations

After Studying This Chapter, You'll Be Able To

- ▲ Understand the diverse sizes and scope of disasters.
- ▲ Differentiate among the diverse hazard categories.
- ▲ Comprehend the relation among hazards, vulnerability, and disasters.
- ▲ Examine the overlap between response and recovery operations.
- ▲ Identify demands to be met in a disaster.

Goals and Outcomes

- ▲ Compare and contrast different disaster magnitudes.
- ▲ Define and use basic disaster and emergency management terminology.
- ▲ Evaluate distinct types of hazards as well as common disaster characteristics.
- ▲ Predict changes resulting from disasters.
- ▲ Evaluate the importance of response and recovery operations.

INTRODUCTION

Welcome to the intriguing disaster discipline and the indispensable response and recovery profession! As a current or future emergency manager, it is crucial that you are aware of the important concepts relating to your vital duties and responsibilities. It is especially imperative that you are able to distinguish among differing disaster magnitudes as well as the factors that lead to and exacerbate these devastating events. For instance, it is vital that you understand natural, technological, and civil/conflict hazards as well as how they interact with the vulnerabilities humans create in society. Comprehending the consequences of disasters and the changes that take place when they occur is likewise necessary if you are to be able to react to them effectively. Being cognizant of the goals pertaining to response and recovery operations will also help you become a successful emergency manager. These topics are addressed in this introductory chapter of *Disaster Response and Recovery: Strategies and Tactics of Resilience*.

1.1 The Occurrence of Disasters

Everyday people around the world are impacted by events that produce injuries, cause death, destroy personal belongings, and interrupt daily activities. These disturbing experiences are categorized as accidents, crises, emergencies, disasters, calamities, or catastrophes. Such incidents adversely affect individuals, groups, communities, and even nations. Each of these events is similar in that they require action from government officials, businesses, nonprofit organizations, citizens and bystanders, and the victims and survivors themselves. However, these occurrences vary dramatically in terms of magnitude, extent of duration, and scope. For example, a traffic accident can typically be handled within minutes by a few police officers who file reports and a tow truck that removes wreckage. A structural conflagration may require one or two fire departments, but it can displace the resident or family for weeks or months. When a mass shooting occurs, resources are needed to neutralize the threat, investigate the incident, and address the longer-term psychological toll that may possibly result from these intentional acts of violence. Alternatively, an airplane crash may necessitate the participation of firefighters and emergency medical service (EMS) personnel as well as airline officials and government employees such as a coroner or public information officer. If the plane crash does not take everyone's life, the victims and survivors of the ordeal may be injured or permanently disabled and require long-term care. Finally, when a major earthquake or hurricane affects an urban area, many organizations will become involved. Besides first responders, additional personnel will be needed to remove debris, repair utilities, provide relief assistance, and coordinate rebuilding endeavors that could take years. Thus, the impact of a minor accident is both quantitatively and qualitatively different than a major disaster or catastrophe (see Table 1-1) (Quarantelli, 2006). While this book does discuss common emergencies and less frequent catastrophes, it focuses most of its attention on disasters.

Table 1-1: Comparison of Event Magnitude

	<i>Accidents</i>	<i>Crises</i>	<i>Emergencies/ disasters</i>	<i>Calamities/ catastrophes</i>
Injuries	Few	Many	Scores/ hundreds	Thousands/ more
Deaths	Few	Many	Scores/ hundreds	Thousands/ more
Damage	Minor	Moderate	Major	Severe
Disruption	Minor	Moderate	Major	Severe
Geographic impact	Immediate area	Local community	Regional	National/ international
Availability of resources	Abundant	Sufficient	Limited	Scarce
Number of responders	Few	Many	Scores/ hundreds	Thousands/ more
Time to recover	Minutes/ hours/days	Days/weeks	Months/years	Years/decades

1.1.1 Important Concepts

Disasters are defined as deadly, destructive, and disruptive events that occur when a hazard interacts with human vulnerability. Disasters are significant societal events that injure and kill people, damage infrastructure and personal property, and complicate the routine activities people undertake on a daily basis (e.g., bathing, cooking, traveling, going to school, working, etc.).

There are two major types of variables that collide to produce a disaster. A **hazard** is the threat or trigger that initiates a disaster. Hazards include natural, technological, or anthropogenic (human-induced) agents like earthquakes, industrial explosions, and even terrorist attacks that negatively affect people or critical infrastructure. **Vulnerability**, on the other hand, refers to the proneness of people to disasters based on factors such as their geographic location, exposure of property, and level of income or other social variables. The ability of individuals, organizations, and communities to deal with disaster also determines the degree of vulnerability. Vulnerability is therefore closely related to the human element of disasters, while hazards may or may not always have a direct social cause.

While disasters result from the interaction of both hazards and vulnerability, the two concepts have distinct implications for practical application. Because hazards are not always controllable, people and organizations should give extra attention to efforts that reduce their vulnerability to disasters. For this reason, the knowledge and expertise of individuals that are employed in emergency management and

Figure 1-1

Emergency management personnel often attend meetings to discuss important emergency management issues and prepare for future disasters.
Michael Rieger/FEMA.

related professions are required to deal effectively with mass emergencies, disasters, calamities, and catastrophes (Figure 1-1).

From an academic standpoint, **emergency management** “is the study of how humans and their institutions deal with hazards, vulnerabilities and the events that result from their interaction” (Jensen, 2013). The emergency management discipline accordingly seeks to advance knowledge about what people and organizations can do to diminish the frequency and impact of disasters. From a practical perspective, **emergency management** “is the managerial function charged with creating the framework within which communities reduce vulnerability to hazards and cope with disasters” (Blanchard et al., 2007, p. 4). This suggests that highly educated and trained individuals have been given the responsibility to advance the goals of emergency management. These professionals are known as emergency managers.

Emergency managers are public servants that help jurisdictions reduce the liabilities and vulnerabilities that lead to disasters. These government employees work closely with many concerned stakeholders and endeavor to build capabilities to deal more effectively with hazards and disasters. Such efforts are commonly described as the disaster life cycle or the four phases of emergency management. This includes mitigation, preparedness, response, and recovery:

- ▲ **Mitigation** refers to several things, including risk reduction, loss minimization, or the alleviation of potential negative impacts associated with disasters. Careful land-use planning, improvements in building design and construction, and a reliance on insurance are examples of mitigation activities.

- ▲ **Preparedness** implies efforts to increase readiness for a disaster. Examples of preparedness initiatives include grant and resource acquisition, planning, training, exercises, and community education.

Mitigation and preparedness should be given the highest priority in the emergency management profession today. For this reason, emergency managers must not be seen solely as an extension of **first responders**—police, fire, and emergency medical personnel. The goals of emergency managers are more proactive and encompassing, even if they do overlap with the objectives and operations of first responders at times.

However, because it is impossible to eliminate all disasters, emergency managers must also be involved in disaster response and recovery operations. **Disaster response** is action “taken immediately before, during, or directly after an emergency occurs, to save lives [and] minimize damage to property” (Godschalk, 1991, p. 136). Examples of disaster response activities include:

- ▲ Warning people of severe weather
- ▲ Evacuating those considered to be at risk
- ▲ Sheltering the affected population

During response, it may also be necessary to provide emergency medical care, relay information to the public, and manage the arrival of donations and volunteers.

Disaster recovery, in contrast, consists of actions “to return vital life support systems to minimum operating standards and long-term activity designed to return life to normal or improved levels” (Godschalk, 1991, p. 136). This incorporates efforts to repair homes damaged by disaster and rebuild community infrastructure such as power lines, roads, and courthouses.

Each of the phases described in Section 1.1.1 is closely related to the others (Neal, 1997). For instance, it is difficult to separate mitigation from preparedness as both are proactive measures to reduce the impact of disaster. Preparedness also has a significant influence upon the success of postdisaster management since it enables a community to anticipate response and recovery needs. In addition, it is difficult to determine when response ends and recovery begins. For instance, are damage assessment and debris removal part of disaster response or disaster recovery operations? Also, during recovery, it is vitally important that steps be taken to prevent future disasters or minimize their potential impact. Instead of simply rebuilding homes that have been damaged by a flood or a tornado, it may be necessary to relocate them to safer areas or implement more stringent construction requirements. For these reasons, the word “phases” may be somewhat misleading. With this in mind, it may be advisable to substitute “phases” with the term “functional areas” or “functional activities.” Also, these areas or activities of emergency management do not appear in a neat, linear fashion so it is difficult to separate them conceptually.

It is also imperative that emergency managers are aware of other important concepts related to their profession. New terms have been introduced recently in emergency management due to the rising threat of terrorism and the advent of homeland security. **Homeland security** was initially defined as “a concerted national effort to prevent terrorist attacks within the United States, reduce America’s

vulnerability to terrorism, and recover from and minimize the damage of attacks that do occur” (Office of Homeland Security, 2002, p. 2). This concept encompasses other important terms such as prevention and protection. **Prevention** refers to actions to stop the occurrence of terrorist attacks. It includes the gathering of intelligence, counterterrorism operations, and border control functions. **Protection**, on the other hand, is more concerned about actions that discourage attacks through increased security measures or efforts to minimize damage if such attacks cannot be prevented in the first place. The reliance on guards, fences, video surveillance, and access control falls into this category.

1.1.2 Preview of Disaster Response and Recovery

As indicated by the title, this book describes strategies and tactics to improve the management of disaster response and recovery operations. This decision is not meant to deny the value of functions relating to mitigation, preparedness, prevention, and protection. It is instead based on the assumption that there is a need for an up-to-date textbook about postdisaster activities. Although there are some great works on this subject already, some may lack current information or approach the material from an academic or practical standpoint only. Also, response and recovery operations have changed significantly over the last decade or two and even more substantially in recent years. The informative research generated by disaster scholars over the years likewise needs to be integrated with the extensive experience of professional emergency managers. Furthermore, there is a dire need to educate government leaders and public servants in order to avert the repetition of mistakes made after Hurricane Katrina and other disasters. Nevertheless, this book may also be of use to corporate personnel or humanitarian workers who are also involved in response and recovery operations.

In order to meet these goals, *Disaster Response and Recovery: Strategies and Tactics of Resilience* will provide a comprehensive discussion about postdisaster management issues and recommendations for their improvement. Chapter 2 will help you as an emergency manager identify the actors involved in response and recovery operations. This includes government officials and agencies as well as corporations, nonprofit organizations, and even ordinary citizens. Chapter 3 discusses human behavior in time of disaster. It dispels widely held myths and illustrates typical social reactions to collective stress. Chapter 4 compares alternative theoretical stances regarding the management of disasters. It acknowledges the strengths and weaknesses of traditional and professional approaches. Chapter 5 covers initial response measures, and it provides ideas on how to protect people through hazard detection, warning, evacuation, and sheltering. Chapter 6 lists steps that can be taken to care for those who have been adversely affected by a disaster. This chapter shares information about search and rescue, emergency medical care, fatality management, and psychological stress. Chapter 7 gives recommendations on how to manage public relations and community resources. In particular, it discusses how you can effectively manage the media, donations, and volunteers after a disaster. The transition from response to recovery is the subject of Chapter 8. It assesses functions such as damage assessment, disaster declarations, and debris removal. In Chapter 9, disaster assistance programs are discussed