COMPARATIVE EMERGENCY MANAGEMENT

Examining Global and Regional Responses to Disasters

DeMond Shondell Miller • Jason David Rivera

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Foreword: Insights on the Role of Regional Collaboration

Disaster management has long been implemented and researched in silos and treated as national, internally handled issues. Events such as the Indian Ocean tsunami have started to make people realize that the silo approach is not working. Because hazards and disasters do not respect national borders, we must introduce bold initiatives that reduce barriers to building disaster-resistant regions. This is an increasingly difficult issue when you consider that 85% of natural hazards impact people in developing countries [United Nations International Strategy for Disaster Reduction (UNISDR) and Inter-Parliamentary Union Disaster Risk Reduction 2010]. As a result, the concepts of disaster reduction, risk reduction, and disaster mitigation have become popular topics. In the past ten years, direct disaster damage costs have risen from US$75.5 billion in the 1960s to almost 1 trillion dollars [Munich Re 2002; *Centre for Research on the Epidemiology of Disasters* (CRED) 2009].

Although disaster risk reduction may be the topic *du jour*, we as scholars, practitioners, community leaders, and citizens must strive to work together to be more inclusive in addressing issues ranging from poverty to sustainable development to climate change. This can be accomplished through many collaborative avenues that work to improve construction, education, policy changes, economic development and stability, and social development. However, these collaboratives among disaster researchers and practitioners must also involve stakeholders at all levels of government and community. Regionalism is one of the tools that can be used to make this happen.

The Importance of a Regional Collaborative Approach to Disaster Mitigation and Preparedness

Why is regional collaboration so important? It is so basic and straightforward. However, in reality, it is probably one of the most important questions we can ask. As the world continues to globalize and countries become more interdependent, it is essential that we start looking across and outside our borders (whatever they may be—city, district, state, country) to address the issues of risk.

We see it time and time again—disasters know no borders. The 2004 Indian Ocean tsunami directly impacted 13 countries on two continents and indirectly many, many more [AlertNet 2010]; Hurricane Katrina made a direct hit on four states in the United States but forced people in all 50 states to seek refuge; and the 2010 floods in China have impacted 28 provinces and more than 140 million people [*China Daily* 2010]. These events clearly illustrate the need for regional cooperation.

The key becomes defining "regional." Is it a series of states within a single country? Or a series of countries that border each other? Possibly a series of countries that share a fault line or a tsunami potential? It may be all of these things in a single country, depending on the risk and the hazards. Or does it even have to be defined? And who should define it? I would offer that the concept is self-defined in any way needed to help protect people and their livelihoods. We need to get beyond the confines of definitions and look at the outcomes. These outcomes are what will protect people. If different methods reduce disaster risk and help to protect people (and not put others at risk), then we should consider them.

To make a determination on what is "good" mitigation, there needs to be solid research from which to pull from. The disaster researchers of the world need to unite and start to work together. There needs to be integration across disciplines in the name of good science. Social scientists need to be work with physical and natural scientists to develop research that considers all aspects of an event—the geophysical nature of the hazard and risk as well as how people make decisions and the socioeconomic and cultural influences. This is simple enough but is not being practiced across the board. The Integrated Research on Disaster Risk* (IRDR) program is attempting to accomplish this by bringing together researchers from

* The IRDR program, established in Beijing, China, is cosponsored by the International Council for Science (ICSU), the International Social Sciences Council (ISSC), and the International Strategy for Disaster Reduction (ISDR). It is designed to address the impacts of disasters on regional and global scales and brings together the combined talents of the natural, socioeconomic, health, and engineering sciences from around the world. IRDR will focus on hazards related to geophysical, oceanographic, climate, and weather-triggered events—and even space weather and impact by near-Earth objects. The IRDR has three major research objectives: (1) to address the gaps in knowledge and methods for the effective identification of disaster risks; (2) to better understand just how decisions can contribute to hazards becoming disasters—or reduce their effects; and (3) to develop knowledge-based actions that will reduce risk and curb losses (for more information, see www.irdrinternational.org.

various disciplines to study disaster risk reduction problems from an integrated approach through both research and consultative forums. This allows countries and regions to learn from each other as well as modify successful programs to fit their social and political context.

The collaboration among researchers also allows comprehensive findings to be shared with practitioners who subsequently can implement merited approaches to help protect people. To better facilitate this process, the research community needs to do a better job of transferring their knowledge and findings to the practitioner community in language and formats that are more easily understood. This will allow for good mitigation and preparedness to be implemented, improved upon, and shared. We need to start doing a better work together to improve disaster risk reduction. This means across borders, disciplines, and sectors.

The Role That Regional Partnerships Play in Disaster Mitigation and Preparedness

Regional partnerships play a key role in disaster mitigation and preparedness. A flood can cross a border—why shouldn't the solution to the flood? The recovery and mitigation need to be done in cross-border collaboration as to not increase risk to those downstream or on the other side of the border. Communities are often living and working on both sides of a given border. Because few communities exist in isolation, mitigation efforts need to be designed in ways that do not view communities as such.

The goals must be self-defined. Sitting in my office in Beijing, I cannot tell you what a regional collaboration should look like for the Andean ridge countries of South America. They must define that within the context of their political and social needs. But what we need to be doing is sharing information. LA RED does just that in Latin America and works in conjunction with organizations throughout the region; other regional organizations include Centro de Coordinación para la Prevención de los Desastres Naturales en América Central (CEPREDENAC) and the Comité Andino para la Prevención y Atención de Desastres (CAPRADE). Each region has its own unique issues, concerns, and vulnerabilities to natural hazards; however, where stakeholders have similar goals and common interests, sharing what works and what does not work can become a common practice.

We need to stop arbitrarily trying to set goals and plans for other countries and recognize that knowledge comes from multiple sources. At the end of the day, what works well in Asia may not work in Africa or Europe. We must allow for unique differences while still practicing good mitigative techniques. We cannot "impose" our "best practices" on others. Personally, I do not like the term "best practices." How do we determine what is best? Everything is filtered through our personal cultural, educational, and political background. Who can single out any one practice and say it is better than something else? If it is helping to protect the people and

the property from disaster, then *it is* a "best practice." There are many local and regional emergency management strategies, and all have been modified to fit the contexts and culture in which they are used. However, for the most part, we fail to disseminate and promote these successes. Disaster researchers and practitioners need to get better at capturing the successes and promoting them in all arenas.

Moreover, when we use the term *lessons learned*, it begs the question, have we really *learned* any lessons? If we have, then why are we still making the same mistakes? Why do losses from natural disasters continue to rise? Capturing what works (and does not work) as well as a better understanding *why* things are working (or not) is key. Through the FORIN* initiative, the IRDR is trying to do just that. Through various research techniques, scholars and practitioners will be able to trace back the origins of the disaster and the fundamental causes by probing more deeply into the complex and underlying causes of growing disaster losses. Such efforts will require a new commitment than previous research conceptualized, new institutional arrangements, and broader interdisciplinary teams [Burton 2010].

Sustaining Regional Collaborations

Regional collaborations can be sustained over time—if the stakeholders have invested the time to develop positive relationships. To just sign a partnership agreement is not saying much other than "we like how you think" or "that seems like a good idea that we can work with." It becomes a matter of taking steps beyond that to make the regional collaboration work. The agreement needs to be specific in what each organization can do and how they can work together. It is much like a seed a farmer plants. The seed will not grow without water, sunlight, and nurturing. Regional collaborations are the same way. The partnership agreements are nothing more than the seed planted in the ground.

It is important to recognize that many countries have acknowledged these issues and ideas and have begun to address them. Worldwide, more than 60 countries have developed National Platforms for Disaster Risk Reduction. Disaster risk reduction works. The Multi-Hazard Mitigation Council found that, for every dollar spent on mitigation, it saves four dollars next time. This is demonstrated by China's effort to reduce the impacts of flood. They have spent US$3.15 averting losses estimated at US$ 12 billion [Department of International Development (DFID) 2004].

As you read through the chapters looking at emergency management around the world, I encourage you to think about this fact and what could be done in terms of additional mitigation and development if money were better spent. According to the World Bank and the U.S. Geological Survey, if US$40 billion were invested in mitigation and preparedness, the worldwide economic losses from disasters could

* The Forensic Disaster Investigations are one of the research initiatives of the IRDR [see Burton 2010, p. 36].

be reduced by US$280 billion [DFID 2004]. Now think, if the $280 billion saved were reinvested in mitigation, it would amount to a savings of over $1,960 billion worldwide. The economics alone demonstrate that we must shift the focus from response to mitigation. This book provides insights into topics of disaster and hazard management that emphasize regional approaches that continue to be salient. Each section focuses on issues that influence the development of regional collaborations within different geographic regions of the world in order to illustrate the dynamics at play across different communities, cultures, nations, and international relations. I challenge each of you to reflect upon the examples provided throughout this book so that we, as a global community, may move away from a responsive culture of emergency management policies and practices and toward regional-collaborative (however you define *regional*) mitigation strategies and policies that reduce disaster and hazard risk.

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Munich Re. 2002. *Topics: annual review, natural catastrophes 2002*. Munich: Munich Re United Nations International Strategy for Disaster Reduction and Inter-Parliamentary Union.

Preface

The twenty-first century has witnessed some of the most devastating disasters in recent history. More striking than in the past is the impact that these events have on the global human society as opposed to just local populations. Although local communities tend to suffer the brunt and initial consequences of disaster, many disasters today have spillover effects that are detrimental to regional government structures, nations, and even a host of nations that inhabit a geographical region. Researchers have acknowledged the fact that disasters, natural as well as technological, are occurring with greater frequency and magnitude throughout the world. In addition to these types of disaster, the world continues to be plagued by human-induced tragedies such as political and social violence, which are in some cases just as devastating to the natural and urban environment as severe natural phenomena. When we observe some of the most recent devastating events to impact entire regions, such as the Deepwater Horizon BP oil spill in the Gulf of Mexico, the Indian Ocean tsunami, Hurricane Katrina, the recent 7.0 magnitude earthquake in Haiti, and flooding in West Africa the notion of developing

better emergency management policies, procedures, and cooperation becomes all the more relevant. In the aftermath of these events, this book serves as a call to action. It is a call for citizens of the twenty-first century to recognize and act to reduce regional infrastructure vulnerability while building secure interdependent networks sustained by trust among regional stakeholders evidenced by informal and formal agreements to work to resolve problems.

Although the costs of the these events are initially measured in lives taken, or the number of people missing, there are other less tangible impacts that have the ability to result in subsequent disasters for individual communities, subnational regions, nations, and even international relations. Changes in economy, international or internally displaced persons, political destabilization, violence, and a whole host of other issues affect the manner in which populations and societies recover from disaster, but also the success of that recovery. At the point where these external pressures begin to impact the recovery of societies, it is sometimes too late and difficult to make impactful policy changes that will have short-term advantageous results for disaster-affected populations. For this reason, changes must be made at the other end of the disaster management spectrum, during the disaster management, mitigation, and response-planning stages of emergency management. By placing more time and effort into emergency management planning, and focusing on mechanisms that can streamline and standardize emergency mitigation and response across political subdivisions, many of these subsequent disaster impacts can be avoided, thereby increasing the potential of local and regional societies to recover from disasters.

This volume contains the work of researchers investigating ways in which societies experiencing regional environmental threats have been forced to find new ways of regionally coping with vulnerabilities to disaster events, and have entered into new ways of developing emergency management policies at the subnational and international levels. We, along with the contributors, offer this research as an opportunity for thinking creatively in hopes that these lessons are integrated into new development projects in an equitable manner that not only is advantageous for specific geographic populations, but for all human society. Furthermore, we bring forth this work as a way to foster dialogue that will serve as a catalyst for the reduction of social vulnerability and build local and regional capacities to withstand environmental assaults. In doing so, we believe this book will contribute to the establishment of a subfield of regional disaster interdisciplinary study to combine sociology, public policy, economics, disaster studies, history, business, emergency management, critical infrastructure, tourism, and peace studies to address, among other things, social, financial, and physical vulnerabilities, risks, organizational resilience, war, and ethnic conflict as contributing externalities to regional security.

We express our sincere appreciation to all the contributors for their tireless work and continued research in the disaster research field. It is through this forum, *Comparative Emergency Management: Examining Global and Regional Responses to*

Disasters, that we share unique, independent yet related case studies that serve to inform, make important recommendations, and empower societies to become more prepared for the challenges in humanity's future.

Jason D. Rivera
DeMond S. Miller

The Editors

DeMond Shondell Miller is a professor of sociology and environmental studies and director of the Liberal Arts and Sciences Institute for Research and Community Service at Rowan University, Glassboro, New Jersey. He has worked as principal investigator to facilitate research projects involving natural and technological disasters, environmental issues, and community satisfaction. His primary area of specialization is environmental sociology (disaster studies and the study of the social construction of place), community development and community organizing, and social impact assessment. Dr. Miller has presented and published several professional papers; recent examples of such work can be found in *Space and Culture: An International Journal of Social Spaces, Journal of Black Studies*, *The Journal of Public Management and Social Policy*, *Sociological Spectrum*, and *The International Journal of Culture*, *Tourism and Hospitality Research*. Recently, he has contributed to several edited volumes including *Through the Eye of Katrina: Social Justice in the United States* and *The Sociology of Katrina: Perspectives on a Modern Catastrophe*; he is the coauthor of *Hurricane Katrina and the Redefinition of Landscape* with Jason D. Rivera (2007) and coeditor of *African American and Community Engagement in Higher Education: Community Service, Service Learning and Community-Based Research* with S. Evans, C. Taylor, and M. Dunlap (2008) and a coeditor of *How Ethnically Marginalized Americans Cope with Catastrophic Disasters: Studies in Suffering and Resiliency* (2010) and *Community Disaster Recovery and Resiliency: Exploring Global Opportunities and Challenges* (2010), with Jason D. Rivera. He is currently engaged in research on international environmental policy, coastal and maritime sustainable tourism, and the ongoing social impacts of climate change in the Mediterranean, Hurricane Katrina and the Deepwater Horizon Oil Spill.

Jason David Rivera is a research associate in the William J. Hughes Center for Public Policy at The Richard Stockton College of New Jersey. His research focuses on social vulnerability to natural and manmade disasters with an emphasis on minority experiences. Additionally, his research highlights institutional structures that have historically perpetuated social vulnerability within minority and low-income communities. His research findings have been incorporated into policy

recommendations that make mitigation, response, and recovery more efficient and effective. Examples of his work can be found in the *Journal of Black Studies*, *Journal of Applied Security Research: Prevention and Response in Asset Protection*, *Terrorism and Violence*, the *Journal of Public Management and Social Policy*, *Sociological Spectrum*, *The Journal for the Study of Radicalism*, *Space and Culture*, *The Sociology of Katrina: Perspectives on a Modern Catastrophe*, *Through the Eye of the Storm: Social Justice in the United States*, and *Dangers in the Incommensurability of Globalization: Socio-Political Volatilities*. He is a coauthor of *Hurricane Katrina and the Redefinition of Landscape*, with DeMond S. Miller (2007) and a coeditor of *How Ethnically Marginalized Americans Cope with Catastrophic Disasters: Studies in Suffering and Resiliency* (2010) and *Community Disaster Recovery and Resiliency: Exploring Global Opportunities and Challenges* (2010), with DeMond S. Miller.

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Tragedy Has Brought Us Together: Responding to New and Emerging Regional Catastrophes

DeMond S. Miller and Jason D. Rivera

> Disasters are always more than physical catastrophes with social consequences; they are also the outcome of a complex and long-running interplay of power and geography that works to shield some people from the whims of nature or the negligence of dangerous industries while exposing others to the unwanted fallout of these acts of nature and man [Kroll-Smith 2001, p. 175].

Tragedy on a Regional Scale

The cataclysmic nature of Cyclone Nargis, the floods in Pakistan, the Indian Ocean tsunami, and Hurricane Katrina has redefined a "new normal" in regions and captured the attention of the entire global community. As disasters are becoming defining moments in modern societies, regional crises are becoming a more common threat to the stability of nations with the destabilization of entire regions hanging in the balance. The first decade of the new millennium closes and with it a heightened sense of awareness and understanding of how natural and built environments, ill-crafted social policies, poverty, and other social vulnerability factors in disaster-prone areas exacerbate the cumulative impact of crisis. In fact, the new normal [Pinkowski 2008], as we define this concept, can be viewed as a 1) complex series of rational choices, 2) a willingness to accept individual burdens

of sheltering disaster risks, 3) and resources needed to shelter those risks within a socially-constructed structure of risk and vulnerability to disaster avoidance. This exploration seems increasingly necessary because disasters, as sociologically conceptualized, are increasing in the United States and elsewhere due to increased development of coastal or riverbank cities [Achenbach 2008], the parallel increase in population density in disaster-prone areas [Picou and Marshall 2007], and politically influenced decisions about building shortcuts in disaster-prone areas [Johnson 2008], and as society knowingly or unknowingly shoulders more of the burdens of disaster risks. Regional vulnerabilities from environmental degradation, climate change, human intervention, and security remain pressing issues for all of us and should be undertaken to reduce community risks in all phases: prevention, mitigation, preparedness, response, and recovery. Disaster-resilient regions first start with disaster-resilient communities that are empowered so that community members can cope with the adverse effects of multiple hazards, including earthquakes, wildfires, tsunamis, hurricanes, terrorist attacks, and other such catastrophes, that occur and send shock waves throughout a region.

Without adequate planning and collaborations, there is little, if anything, governments within a region can do to prevent the loss of life and property with the rapid onset of a disaster. New paradigms and strategies are needed to address the complex problems of jurisdictional boundaries, disparities among neighboring countries, and how social, cultural, and political factors influence how communities perceive and address hazards, risks, and vulnerabilities. Branscomb and Michel-Kerjan [2006] maintained that "[h]ow societies learn to work collectively to achieve the goal of safety and security and to sustain it in the long term is thus of prime importance" [p. 395]. A collective approach among stakeholders would require, at a minimum, mutual understanding and trust to make collaborations work [Gonzalez 2010]. An example of attempts to build mutual understanding and trust through regional collaboration by addressing longstanding national hostilities between neighbors became more apparent during the 2010 Haitian earthquake. The countries of Haiti and the Dominican Republic share the island of Hispaniola and they share a common set of vulnerabilities to risks; however, the Dominican Republic did not suffer extensive damage as did Haiti. Nevertheless, the Dominican Republic put aside decades of hostility and responded swiftly and generously to the crisis in Haiti [Margesson and Taft-Morales 2010]. Although the two countries have a long history of hostility toward one another, Presidents Preval and Fernandez have been working in recent years to bridge cultural, political, and social gaps toward having a more cooperative relationship; this has been reflected in the Dominican response of sending relief supplies and personnel. Furthermore, the Dominican Republic facilitated aid delivery through use of its airports, roads, and ports; it has stopped repatriation of undocumented Haitians and opened its border to injured Haitians, thousands of whom have been treated in both public and private hospitals [Margesson and Taft-Morales 2010].

The collaboration and actual work of responding and recovering from disasters is performed by government agencies, private sector companies, nonprofit organizations, and citizens [Stewart, Kolluru, and Smith 2009]. With proper planning, key collaborations among stakeholders can facilitate a rapid response in the midst of disasters. Because private corporations have extensive supply and network chains and local distribution systems already in place, a more rapid assessment of the extent and magnitude of the situation can be gathered. Recent examples of regional catastrophes of global significance include the 2004 Indian Ocean earthquake and tsunami,* Hurricane Katrina in 2005,† the 2010 Haitian earthquake,‡ and the Deepwater Horizon BP oil spill.§ Numerous other examples exist to illustrate the increasing role regional crises play in our lives. Each of the above disasters represents an unprecedented national, regional, and global response.

Because we live in an interconnected world of complex networks with linked economic, social, communication, and food distribution systems, any disruption in the local or regional infrastructure quickly affects others; when some are vulnerable, all are vulnerable in that the welfare and lives of significant portions of the population are in harm's way.¶ As these chapters suggest, opportunities for initial public–private collaborations can result in a more timely response at the local, state, and national levels to make the long and arduous process of restoring communities less difficult following a tragedy. Strategic approaches to enhancing institutional capacity (forged by partnerships among stakeholders) to implement

* The 2004 Indian Ocean earthquake and tsunami occurred on December 26, 2004 and represents the largest natural disaster in modern history. Caused by a 9.0 earthquake under the seabed of Sumatra, Indonesia, it claimed the lives of more than 227,000 people in 14 countries with economic losses estimated to be over 10 billion (Robinson and Jarvie 2008; World Bank 2005).

† Hurricane Katrina made its first landfall along the Gulf Coast region of the United States in the American state of Louisiana. Katrina's wind, storm surge, and subsequent flooding of New Orleans and other places along the Gulf Coast became known as the most costly disaster with over 1,836 dead and 135 missing (LA Department of Health and Hospitals, 2006).

‡ The largest earthquake ever recorded in Haiti devastated parts of the country, including the capital, on January 12, 2010. The quake, centered approximately 15 miles southwest of Port-au-Prince, had a magnitude of 7.0. A series of strong aftershocks have followed (U.S. Geological Survey 2010). The Haitian government estimated that 230,000 people died with another 1,000,000 homeless (Associated Press 2010).

§ The Deepwater Horizon oil spill, or BP Oil Spill, the largest accidental marine oil spill in the history of the petroleum industry is the result of the April 20, 2010 Deepwater Horizon drilling rig explosion releasing approximately 4.9 million barrels (780×10^3 m^3) of crude oil. It was estimated that 53,000 barrels per day (8400 m^3/d) were escaping from the well just before it was capped on July 15, 2010 (Robertson and Krauss 2010; Telegraph 2010; USA Today 2010).

¶ At the time of writing, Pakistan experienced the worse flooding, which began in July 2010 after record heavy monsoon rains. The Khyber Pakhtunkhwa province of Pakistan was worst affected. More than 1,600 people were killed, thousands were rendered homeless, and more than 20 million people are affected. See http://www.2010pakistanfloods.com/

planning and prevention strategies ultimately maximizes a community's ability to withstand mass emergencies. These partnerships serve as vital links to an efficient primary initial response, subsequent recovery efforts, and the initial stages of building a more resilient community that positions resources for current and future disasters.

Understanding the Region and the Importance of a Regional Approach

In an important lecture, Paasi [2000] called on everyone to rethink the concept of region and its significance. With the increased interactions and flow of information, capital, people, and information across geopolitical lines, Paasi maintained that we need to review our current conceptualizations of regions and regionalism. While "[c]oncomitantly the 1990s have witnessed a resurgence of regions and boundaries on the one hand in academic discourse and in concrete research, on the other hand, in everyday life struggles of various social groupings . . . [a]n important challenge in much of current research has been to reflect the emerging forms of governance in a situation where globalization and the apparent re-scaling of state governance are fusing our traditional thinking on spatial scales and categories" [Paasi 2000, p. 1]. Furthermore, Paasi [2000] maintained that with the evolution of the traditional notion of a region within a global context as a social construct and that "[s]pace and spatial patterns are not independent of social, cultural and natural processes but, as it has been strongly emphasized, space is not a causal power which would as such determine social processes, rather social (and cultural) and spatial are constituents and outcomes of each other" [p. 2].

To this end, this volume underscores the problems society faces when addressing disasters of regional significance. Also, through this volume, the authors maintain that the challenge is not to curb or lessen the need for local approaches to increase resiliency, but rather to seize the opportunities it provides. Furthermore, we recognize a variety of inequalities and note that "social vulnerability is partially the product of social inequalities. . . . however, it also includes place inequalities—those characteristics of communities and the built environment, such as the level of urbanization, growth rates, and economic vitality, that contribute to [i.e., constitute] the social vulnerability of places" [Cutter, Boruff, and Shirley 2003, p. 243; see also Iversen and Armstrong 2008] and placing an emphasis on the "need for strengthening community resilience, building public–private partnerships, reaching out to marginalized community residents and their trusted institutions, and developing consensus-based coordinating mechanisms at the interorganizational, community, and intergovernmental levels" [Tierney et al. 2006, p. 76; see also Iversen and Armstrong 2008]. For these reasons, we argue that there is a pressing need for engaging in regional collaborations built on local networks and multinational disaster concerns.

For instance, the sheer magnitude of the Indian Ocean tsunami involved several countries, all grappling with similar issues. The transboundary, multijurisdictional issues had to have an international cooperative focus that was grounded in not only local realities, but also regional interests that could restore stability through formal intergovernmental relations. Regional collaboration where two or more governments can take several forms and respond to several types of problems by experiences, strategies, and knowledge used in addressing similar challenges. It is important to share what strategies work in a way that produces evidence-based learning so that similar problems can be addressed within different regions that face similar challenges.

An example of a region-to-region collaboration is the United State's Gulf Coast region seeking the expertise of other areas around the world where coastal cities are below sea level, such as The Netherlands, after Hurricane Katrina. Other regions of the world have interregional strategies to cope with natural hazards by addressing gaps in institutional frameworks, risk identification, knowledge management, governance, and emergency response. To this end, the *African Regional Strategy for Disaster Risk Reduction (*ARSDRR*)** seeks to:

1) Increase political commitment to disaster risk reduction
2) Improve the identification and assessment of disaster risks
3) Enhance knowledge management of disaster risk reduction
4) Increase public awareness of disaster risk education
5) Improve governance of disaster risk reduction institutions
6) Integrate disaster risk reduction into emergency response management

The *African Regional Strategy for Disaster Risk Reduction* [2004] builds on existing risk reduction institutions and programs available in African countries and aims to reduce disaster risks in the development and application of policies, strategies, and practices that minimize vulnerabilities and prevent, mitigate, or prepare for the adverse impacts of hazards within the broad context of sustainable development. To do so, the *African Regional Strategy for Disaster Risk Reduction* also sets forth strategic directions to achieve the five objectives. For example, the strategic directions to increase political commitment to disaster risk reduction include strengthening lobbying and advocacy for political commitment, responsibility, and accountability, while increasing institutional frameworks for risk reduction. It also calls for the African continent and member countries within regions of the continent to recognize hazards and vulnerability factors as dynamic and a need for the improvement

* The Strategy was adopted by African Ministers at the 10th Meeting of the African Ministerial Conference on the Environment (AMCEN), June 26–30, 2004, and submitted to the AU Assembly Summit, where the Strategy was positively received by Heads of State at the 3rd Ordinary Session of the Assembly in Addis Ababa, Ethiopia, July 6–8, 2004, with a call to develop a Program of Action for its implementation.

in the quality of information about disaster risks. While improving the identification, assessment, and monitoring of hazards, vulnerabilities, and capacities, the ARSDRR seeks to formalize greater integration, coordination, and exchange of information among stakeholders, advance efforts to increase the degree to which academic institutions and research centers enhance knowledge management for disaster risk reduction are also being made.

International diplomacy (interregional environmental diplomacy) used to enhance regional resilience through governance involves institutionalizing risk reduction from the local level to the regional level in such a way that emphasizes decentralized power structures and more coordinated partnerships that involve adapted local-level risk management strategies based on local knowledge, evidence-based strategies, and best practices so that large bureaucracies do not hinder aid when it is needed most. For these situations, the development of a national platform for response and disaster management may not always be most beneficial. Rather, an increased international cooperation and coordination strategy may work best when regions suffer from the same catastrophic events. In this way, nations or states from around a region can harmonize policies, organizational agreements, and partnerships and increase public participation in the planning and implementation of risk reduction interventions.

Finally, when an unavoidable catastrophe strikes, regional emergency responses must be coordinated to limit the impacts of the disaster. To this end, emergency responders and regional leaders must be able to coordinate efforts in a manner that resources are not duplicated, and public–private partnerships can be forced to strengthen contingency planning and other preparedness measures in emergency management. For example, during the 2010 Haitian earthquake, Latin American countries responded to Haiti's crisis with immediate provision of emergency supplies, personnel, and pledges of financial and other assistance for its long-term recovery. Members of the Organization of American States (OAS) pledged humanitarian, financial, and other support to Haiti [Margesson and Taft-Morales 2010]. The OAS Group of Friends of Haiti met on January 14th to coordinate search and rescue efforts, prompt donations, and discuss ways to promote recovery. The 15-member Caribbean Community (CARICOM), of which Haiti is also a member, mobilized its disaster emergency response system to assist Haiti, and several members have sent emergency supplies or promised financial assistance. Additionally, the Caribbean Disaster Emergency Management Agency assembled a response team to assess conditions in Haiti as well [Caribbean Media Corporation 2010; also see Margesson and Taft-Morales 2010].

The Region as a Shared Risk and an Embedded Future

Presently we find evidence of the risks shouldered by the embedded social structures that exist within regions. In this work, each chapter may approach the

conceptualization of region differently; however, they all stress the common interest in finding ways to reduce environmental risks and vulnerabilities to human-induced, natural, and technological disasters. With the number of vulnerabilities that exist (i.e., drought, global climate change, rapid spread of disease, shifts in the balance of threats where the poor shoulder the greater amount of environmental hazards, population growth, the rise of megacities and fast urbanization, scarcity of drinkable water, declines in food production, and acceleration of toxic warfare) and their policy implications, we need to recast our arguments in the terms of security—not only at the local and national levels, but also at the regional level. For example, with the onset of global climate change and intense urbanization, cities worldwide face several water management problems that include shortages, contamination, and security issues in response to the uncertain access to safe potable water.

The role of disaster awareness in building more resilient societies and communities through education and knowledge transfer has been repeatedly highlighted, particularly in relation to the preparedness, mitigation, emergency response, and recovery stages of the disaster management cycle [Nielsen and Lidstone 1998]. The importance of hazard awareness promotion through the provision of and access to disaster information and knowledge is increasingly being recognized as a critical strategy for the mitigation of the social, economic, and environmental impacts of disasters and, by extension, the enhancement of regional sustainable development (see Chapter 3). What is at stake, we argue, is the very existence of global environmental, social, cultural, and economic security. The case studies in the book all address unique ways to enhance local and regional efforts to reduce vulnerabilities. It is through this forum, *Comparative Emergency Management: Examining Global and Regional Responses to Disasters*, that we share unique interdependent, yet related, case studies that serve to inform, make important recommendations, and empower societies to become more prepared for future challenges.

Structure of the Work

This book has five thematic sections rooted in regional responses to natural, technological, and human-induced catastrophes that highlight the role of regional collaborations. Each chapter is structured so that the primary focus centers on a region by using a case study and identifies what impact that catastrophe had on that region. Moreover, attention to the stakeholders that are brought together from diverse cultures and political and economic systems to collaboratively address common problems are used to illustrate best practices in addressing regional threats through sustainable partnerships that last over time.

Although each chapter represents an independent case study, the authors discuss collaborations within or across country borders. Overall, each chapter focuses on proactive approaches to building long-term structures that handle catastrophes

as they occur. By highlighting regional concerns with a specific case study, the authors make a case for the importance of the collaboration across regions that ultimately strengthen and enhance the resiliency of those in harms way. Section I, The Americas, addresses issues to help countries increase their preparedness and mitigation strategies. This section focuses on the collaborations within and among countries in the Caribbean, North America, Central America, and South America in combating regional threats including floods and hurricanes, landslides, and earthquakes. Chapter 1 by Kathleen Vito describes select disasters in specific regions around the United States. Vito maintains that local businesses, educational institutions, civic groups, law enforcement, and public health groups play a specific role that can impact response and recovery. Focusing on internal organizations, creating alliances, and taking on additional responsibilities while relying less on government services will have more long-term benefits. Planning for future emergencies and disasters is ongoing and will need to be a continuous and coordinated process for public health to succeed in its mission to protect and improve the health of our communities [Morrow 2007].

Chapter 2 by Philip Osei, maintains that fashioning modern emergency management systems for the region and individual islands requires extraordinary acumen in communication and collaboration and a wealth of resources. Effective emergency management is premised on the comprehensive integration of emergency plans at all levels of state and nonstate actor involvement. Network governance is important at all phases of the disaster risk reduction process: mitigation, preparedness, response, and recovery [Osei 2007]. To cope with the complexity of natural phenomena, institutional arrangements, and related management systems should incorporate different actors from different areas of society. Thus, an emphasis on the establishment of multiactor structures, consisting of both public and private actors, is a common denominator [Osei 2007].

In Chapter 3, Virginia Clerveaux and Balfour Spence delves into the relationship between disaster awareness and loss reduction in relation to disaster risk management planning. They describe how economic factors can impede the promotion of proper awareness within differing communities in the Caribbean. Globalization has brought forth new challenges. It is up to all involved sectors to create and incorporate up-to-date techniques that better communicate risk reduction information to all affected communities. Introducing a game that can be amusing while at the same time provide useful information to children in disaster-prone areas may ultimately help communities overcome many challenges in disaster recovery.

In Chapter 4, Hutter and Miller argue that, in the aftermath of Hurricane Katrina, tourist and convention planners, city leaders, cultural institutions, and private businesses (such as tour guides) vied for opportunities to coordinate, control, and produce an image of the city that ultimately emphasized the cultural revitalization of New Orleans, which served to develop rules and mechanisms for policies governing the use of culture as the cornerstone of both the tourism industry and economic development of the New Orleans region. These key stakeholders in

the tourism industry ultimately govern how places are branded and rebranded and how a destination's symbolic economy becomes the primary driver for rebuilding after a disaster.

Chapter 5 by Benjamin Kelly describes the attempt to address sanitation and environmental change in Ontario, Canada. The Learning Alliance is a group of engineers and scientists that is committed to the development and maintenance of ecologically sustainable technologies and strategies that will reduce risks associated with water management. Although there are plans that are designed specifically to address freshwater conservation, this group has been recruiting other engineers and scientists, businesses, and governments, and pooling knowledge to improve conservation efforts.

In Section II, Africa and the Middle East, issues of security and protection from harm are detailed. The Middle East and North African region (MENA) is prone to various types of disasters caused by natural hazards, such as earthquakes, floods, drought, and landslides. Disasters impose increasingly heavy human and property losses on countries in this region, which hampers their socioeconomic development. Governments and other actors in the MENA region have been developing various strategies targeting disaster preparedness and response; however, disaster risk reduction linked to national development processes is not yet integrated in the planning and policy paradigms of the region. This section seeks to understand how comprehensive and integrated approaches to disaster management and risk reduction are essential in building resilience to disasters, thus reducing human and property losses.

In Chapter 6, Filip Aggestam and Stephanie Hodge discuss the role of stakeholder participation in relation to transboundary water governance projects. The management of a transboundary water body is a daunting task. Despite great leaps forward in our understanding of how to manage limited resources, current water governance constitutes an increasingly complex web that integrates technical and scientific knowledge, legal requirements, socioeconomic aspects, and multi-stakeholder participation [Baggett et al. 2006]. With proper strategies in place, decision-makers may understand and decide on objectives, policy development, implementation, and participation strategies within the context of community-based improvement of resilience and risk reduction.

In Chapter 7, Sheryl Hendriks and Scott Drimie focus on the food crisis in Africa. Since 1998, Africa has experienced an average of 20 food emergencies a year [Economic and Social Council 2005]. A majority of the world's hungry live on the African continent, yet national and regional leaders have failed to progress toward an ultimate goal of decreasing the number of hungry people by half in the year 2015. Many of the decisions were ill-advised and focused on long-term goals rather than on the current crisis impacting the regional relationships among neighboring communities. The way communities and regions in Africa reacted gives insight into the cultural, economic, and social structure of nations and regions on the continent.

In Chapter 8, Sultan Khan describes the actions of faith-based organizations and their response in disaster situations. Faith-based organizations play a major role in the response effort of many humanitarian disasters that occur. Khan focuses on a study of South African Muslim diaspora. Most of the Muslim populations, due to their faith, practice forms of social giving during human disasters. Their motivation for response, the assistance methods used, the deployment of workers after a disaster, and the level of interaction between Muslims and other aid are thoroughly discussed in this chapter.

In Chapter 9, Alex Altshuler maintains that interorganizational cooperation in the field of preparedness for war-caused disaster between local emergency managers and various stakeholders is important. He examines a case study of the Jewish and the Arab sector in Israel. The relationship between different types of stakeholders (i.e., national emergency organizations and governmental ministries, disaster relief and volunteer organizations, trade unions, local governments, health management organizations, community centers, philanthropists, residents and professional consultants) is part of the study. Interorganizational cooperation is a key factor in predicting the level of emergency preparedness in both the Arab and the Jewish sectors in Israel. In addition to cooperation on the local level, the authors propose to establish formal regional frameworks for continuous cooperation in which representatives of both the Arab and the Jewish local authorities will be able to cooperate in a more effective way while assisting each other reciprocally.

In Chapter 10, Beryl Cheal discusses the importance that schools play in rebuilding communities that have been affected by disaster. There are now more storms, as well as more human-induced disasters that result in catastrophes. After a disaster, it is crucial that people do all that they can to bring forth the restoration of their community. Schools play a substantial role in this process by aiding in the development of a preparedness plan that is usable for a specific area. Along with this, schools can be used to aid students and their family members in recovering from the devastating affects of the disaster. Community Emergency Response Service (CERT) is a program offered in many communities around the United States that can be used to come up with a strategy [Rich and Kelman 2007]. A similar program called Teen School Emergency Response Training (SERT) has been developed for the youth, primarily between the ages of 15 to 18 [Rich and Kelman 2007]. These programs help communities and students alike in many disaster-related aspects. Even though students are some of the most vulnerable in times of disasters, they can also be of great importance and can even help save lives. Stressing the fact that planning ahead is key will ultimately teach children that knowing what to do, as well as when to do it, is important. Schools play a significant role in assuring regional stability in the aftermath of a disaster.

Section III, Europe, is composed of three chapters. Due to the proximity of the many nations that comprise Europe, security from natural, human-induced, and technological disasters remains an international concern. Since the expan-

sion of the European Union (EU), catastrophic events resulting in loss of life and property remains a priority. In Chapter 11, Rémy Bossu, Sébastien Gilles, Gilles Mazet-Roux, and Fréderic Roussel discuss an innovative way to engage the public in the response efforts to earthquakes. The European-Mediterranean Seismological Centre (EMSC) works alongside the public to reduce the hardships associated with earthquakes. The EMSC allows for public involvement by giving affected citizens an opportunity to share their observations of a disaster. The public can share this important information with other witnesses and the scientific community via the EMSC Web site. Allowing citizens an active role in earthquake response makes the notion of risk more tangible and intuitive, develops a culture of risk, and may increase public receptivity to prevention messages [Bossu el al. 2009].

In Chapter 12, Sotiris Chtouris and Flora Tzelepoglou examine the devastating forest fires that occurred in Greece in 2007. This disaster proved that there was not enough done in terms of preparation. Risk prevention, mainly through information and mobilization of local residents, emerged as a key factor if we want to confront natural hazards in an effective way, mitigating environmental damage and community problems. The unexpected Greek forest fires of 2007 left the affected communities with the daunting task of coordinating service groups that would work together across the region with hopes of overcoming the disaster at hand. Research data confirm that environmental risk perceptions and risk management are crucial social issues not only in Greece, but also in Southern Europe as well because they involve low levels of social participation and social capital [Putnam 1993]. On the other hand, highly developed social networks based on family (nuclear and extended) ties preserve their cohesion [Chtouris 2004], but they fail to function as cooperation networks when emergencies break out and risk management is called for. Further issues include the lack of proper cooperation among all major parties involved. This lack of planning may prove to be detrimental as it did in the Greek forest fires in 2007.

In Chapter 13, Ioannis M. Dokas, John Feehan, Stephen C. Fortier, Franclin Foping, and Syed Imran review the importance of risk reduction in a case study of the water systems of Ireland. The authors maintain that drinking water systems in several regions of Ireland are vulnerable to natural disasters. The lack of action to improve these systems may serve to increase the nation's population susceptibility to a manmade disaster. As a result, governments, state agencies, international organizations, and other bodies are developing disaster risk reduction and proactive risk management strategies. Drinking water systems are clearly crucial; the security of these supplies continue to face challenges which can severely impact communities around Ireland.

Section IV focuses on Asian nations. As a region, Asia is diverse in area, population, geography, natural resources, cultural legacy, colonial experiences, stages of development, and systems of government. With the coastal urban populations of Malaysia, Indonesia, Philippines, China, and Thailand increasing, the pressure on urban infrastructure and vulnerability to hazards increases as the urban poor settle in fragile environments. In Chapter 14, Patrick Kilby and Kim Williamson examine

community-oriented disaster response and the lessons learned from the humanitarian response to the Asian tsunami in India and the Jogyakarta earthquake in Indonesia. Disaster management includes the concept of disaster risk reduction. This idea is important for many communities that are forced to endure catastrophic disasters, but this concept sits behind the disaster response effort due to the complexity and evolution of the global environment. Although it is important that vulnerable areas such as Asia and Indonesia are well prepared, the response of these communities after a disaster is crucial. Having a strong disaster response strategy can drastically reduce the number of lives lost and repair damaged infrastructure more quickly, speeding a community's return to everyday life. Disaster response thus emerges as an essential and ongoing component of disaster risk management. The development of government and public response plans is not an easy task to accomplish, but it plays a large role in returning to normalcy.

In Chapter 15, Chuangsheng Jiang and Yunfeng Deng discuss an incident that occurred in China at the Lujia well. On December 23, 2003, the Lujia well suffered a blowout accident. Residents of the affected areas had to be evacuated to assure their safety. A total of four communities were affected. The destruction left 243 people dead and many others injured. An analysis was administered to make sure that incidents like this do not occur in the future. This preparedness plan may assure that lives as well as money are saved. A series of professional standards based on blowout risk prevention and control was developed [China Academy of Safety Science and Technology 2008]. This was the first occurrence that safety science institutions in mainland China had performed systematic technical field conditions after a technological disaster. This action was a step in the right direction in relation to safer workplaces. Before the blowout, 96.4% of villagers knew nothing or very little of the potential hazards of the well. After the blowout, 80% of villagers still remained unaware of the dangers that lie among them [Yuan and Pu 2008]. This number needs to be substantially lower to be prepared for another disaster.

The final section, Global Challenges and Next Steps for the Twenty-First Century, features three components: Chapter 16 by Anatoly Oleksiyenko, our conclusion, and an afterword by J. Steven Picou. In Chapter 16, Oleksiyenko explains the need for more coordination and training for responders to health-related regional and global crises. Global health is the concern of many organizations, including national governments, international agencies, private foundations, pharmaceutical companies, and nongovernmental and academic institutions, among other relevant actors. Problems such as pandemics and disaster medical care bring forth the need for more effective and strategic planning across many stakeholders in the healthcare sector. However, this is not always easily accomplished due to various political, economic, and cultural factors. The issue lies in creating an infrastructure that involves all of the complex organizations in the best way possible. Oleksiyenko asserts that medical schools play a pivotal role within these partnerships of promoting quality global health during times of disaster.

Finally, J. Steven Picou proposes an insightful approach to an effective response that relates to both regional cooperation and individual empowerment. When considering potential climate change catastrophes yet to come, Picou admonishes us to reframe Beck's concept of individualization when viewing emerging regional partnerships, networks, cooperatives, and other collaborative systems for responding to disasters as part of a regional response to help us understand the structural potential of people for responding to catastrophe in the twenty-first century.

These chapters represent a wealth of information that can be used for regional collaboration, which can serve as a catalyst for meaningful social change that impacts lives by decreasing vulnerabilities to regional environmental threats. Long-lasting social change is the most influential way in which emergency management and disaster prevention can be instituted across international boundaries. Only through further discussion and expansion of the research presented in this and similar volumes can we go from analysis to policy formation, to policy application, and to life-saving action.

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THE AMERICAS

I

Chapter 1

Forging Partnerships within Geopolitical Regions of the United States for Mutual Aid and Mass Prophylaxis Intervention

Kathleen O. Vito

Contents