

Adapting to Climate Change: Lessons from Natural Hazards Planning

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Adapting to climate change poses a major challenge for nations and communities around the world. Many will have to contend with unprecedented risks and impacts due to rising sea levels, temperature and rainfall shifts, and more intense coastal storms. Rural and urban livelihoods will be profoundly affected. Poor and marginalized groups will be especially hard hit. Increasing attention is therefore being focused on how to adapt to climate change. But much remains to be done to understand the underlying challenges and opportunities. Moreover, there is a compelling need to take practical steps to build community sustainability and resilience in the face of climate change.

Much has been learned from experience and scholarship in the field of natural hazards planning that is directly relevant to climate change adaptation. This presentation synthesizes this scholarship and distills lessons from case studies around the world to provide practical guidance for communities to plan for and adapt to climate change. Natural hazards events become disasters when a physical peril, such as an extreme weather event, exceeds the coping capacity of the imperiled community, nation or region, such as the New Orleans levee failure and dismal response to Hurricane Katrina in 2005 or the devastating impacts of the 2004 Indian Ocean tsunami. Natural hazards planning scholars and practitioners have learned that disaster can be averted if proactive steps are taken to reduce social vulnerability, maintain the natural functions of healthy ecosystems (such as coastal ecosystems that reduce the impacts of coastal storms) and avoid land-use choices that put people in harm's way. These lessons have particular relevance for understanding and addressing the barriers to and opportunities for adapting to climate change.

The materials used in this presentation draw from the soon to be published book, *Adapting to Climate Change: Lessons from Natural Hazards Planning* which is co-edited by Gavin Smith and Bruce Glavovic. This is the first book to provide climate change policy-makers, scholars, students, and practitioners with a rigorous understanding of natural hazards planning scholarship and experience to overcome these barriers and unlock opportunities for building communities that are sustainable and resilient to climate change.

Improving the ability to draw from what we know about natural hazards and disasters and apply this knowledge in practice to the challenges associated with climate change adaptation is the purpose of this book. We do this by first sharing lessons derived from the study and practice of natural hazards risk management across a global selection of case studies. The use of a case study approach allows for a more in-depth and critical review of lessons across differing hazards and spatial and geo-political scales, including those lessons that highlight key problems. Examples include the pitfalls of failing to proactively plan for and reduce the potentially damaging effects of natural hazards on human settlements; the limited attention placed on conveying risk to policy makers, communities, and

individuals in a manner that resonates with them and leads to targeted action; and the perpetuation of vulnerability through poor recovery and reconstruction strategies including the lack of pre-event planning for post-disaster recovery. Lessons also underscore the importance of establishing broad, supportive networks that fuel the power of governance and reflexive learning across formal and informal institutions; fostering an inclusive dialogue that links climate change adaptation strategies and post-disaster assistance, including the ability to maximize the use of available resources following major disasters to achieve complementary aims such as risk reduction and climate change adaptation, sustainable development, and disaster resilience; and the importance of addressing endemic problems like low levels of institutional capacity and commitment, poverty, environmental degradation, and fragile economies that are “exposed” during disasters.

The book is organized in the following manner. After the introductory chapter, we begin with a section titled *Climate Change Adaptation: Theory and Practice*. This section draws on chapters written by Jorn Birkmann and Joanna Pardoe (*Climate Change Adaptation and Disaster Risk Reduction: Conceptual Approaches, Synergies and Mismatches*) who provide an overview of the linkages and gaps between climate change adaptation and disaster risk reduction concepts and associated policies. Gina Zievogel and Sue Parnell’s chapter, *Tackling Barriers to Climate Change Adaptation in South African Coastal Cities* describes the issues facing Cape Town and eThekweni as a way to begin addressing adaptation at the urban city-scale. Both chapters help to unpack important topics that are found throughout the remainder of the book. These include the identification of key barriers and opportunities to achieving adaptation, the importance of developing a broad institutional framework for action that is cognizant of the growing base of knowledge (including that which is locally informed), the need to recognize and account for varied temporal and spatial scales, and the ability to develop an appropriate mix of flexible and holistic policies that address underlying issues such as risk reduction and development.

The next section, titled *The Nature of Disasters and the Role of Natural Hazards Planning in Building Resilient Communities*, is comprised of five chapters that highlight the importance of planning and collective action. Anthony Oliver Smith’s chapter, *Climate Change Adaptation and Disaster Risk Reduction in Highland Peru* describes adaptation as a long-standing cultural phenomenon closely associated with the survival of societies over time. This perspective helps the reader to understand the complexities of this largely reactive process and compares this with hazard mitigation which is ideally proactive in nature. In chapter 5, Iain White (*Castles on Sand: The Shifting Sources of Flood Risk and the Implications for Flood Governance*) explains the challenges facing cities and regions in England as increased urbanization and repeated flood-related disasters has led to a change in thinking from an approach driven by the adoption of flood defenses in the aftermath of an event to a more pre-emptive focus on risk management. In *Planning for Resilient Coastal Communities: Emerging Practice and Future Directions*, Timothy Beatley provides a vision of what it means to be a resilient coastal community, discusses principles underlying this designation, and highlights ways that communities have achieved this objective. Bill Simbieda’s chapter, *Resilience and Adaptation: The Emergence of Local Action in California*, focuses on the cities of Berkeley and San Francisco, California (USA) both of whom assume different approaches to achieving disaster resilience, emphasizing physical and institutional methods respectively. Philip Berke, in *Rising to the Challenge: Planning for Adaptation in the Age of Climate Change*, argues that scenario-based planning provides a sound means to confront what still amounts to a great deal of uncertainty in our understanding of climate change-related impacts while providing the flexibility needed to account for unexpected outcomes and new information.

In the last major section, Case Studies: Lessons from Natural Hazards, we draw from a collection of case studies from across the world, including Applying Hurricane Recovery Lessons in the US to Climate Change Adaptation: Hurricanes Fran and Floyd in North Carolina (USA) (Gavin Smith); The 2004 Manawatu Floods, New Zealand: Integrating Flood Risk Reduction and Climate Change Adaptation (Bruce Glavovic); Learning from Analyses of Policy Frames and Informal Institutions in the Fire Management Sector of Victoria, Australia (Karen Bosomworth, John Handmer and Steven Dovers); Natural Coastal Hazards Planning, the 2004 Tsunami and Lessons Learned for Climate Change Adaptation in Samoa (Namouta Poutasi, Michele Daly, Jude Kohlhase and Filomena Nelson); Recovering from the 2004 Tsunami: Lessons for Climate Change Response in India (Ahana Lakshmi, R. Purvaja and R. Ramesh); Disaster Recovery in Coastal Mississippi (USA): Lesson Drawing from Hurricanes Camille and Katrina (Gavin Smith); and Waves of Adversity, Layers of Resilience: Floods, Hurricanes, Oil Spills, and Adapting to a Changing Climate in the Mississippi Delta (Bruce Glavovic).

Each of the case studies addresses a number of topical areas, including the pre- and post-event setting of the locales being discussed and how these conditions shape the policies, programs, and plans developed and implemented in the face of natural hazards and disasters; lessons drawn from these experiences; the identification of barriers and opportunities for mainstreaming hazard mitigation and disaster recovery policies into climate change adaptation; and a set of recommendations for action. A review of the chapters show that a number of common themes emerge, including the importance of effective governance/collective action; the influence of pre-event conditions such as culture, wealth, policy frameworks, and institutions on desired outcomes; the value of establishing good vertical connectivity between national policy and local plans; adopting varied and flexible risk management strategies; and viewing disasters as focusing events, including the ability to adopt new policies while recognizing the importance of including less powerful groups in the decision making process.

The final chapter, Conclusions, Recommendations, and Next Steps: Integrating Planning for Natural Hazards and Climate Change Adaptation consolidates policy recommendations drawn from throughout the text and organizes them under a broad vision and set of thematic areas that are framed as goal statements. The chapter concludes with an examination of how these goals can be operationalized in both existing, and where necessary, new plans, policies, and collective arrangements that span multi-institutional and multi-lateral governance frameworks.