

The role of ecosystems in disaster risk reduction

**PEDRR**  
Ecosystems for Adaptation  
and Disaster Risk Reduction



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and Marisol Estrella

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# Endorsements

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“The application of disaster risk reduction has saved millions of lives and helped communities globally. But the ecosystems on which communities depend upon for their protection, economic well-being and recovery have, until now, been largely ignored in disaster risk reduction. Incorporating ecosystems into disaster risk reduction can save lives, aid recovery and help build a more resilient and secure planet for all. This timely book is an essential tool for policymakers, scientists, economists, sociologists, and practitioners on why and how to integrate ecosystems into disaster risk reduction. Scientific studies have repeatedly confirmed the role of healthy ecosystems in providing resilience against disasters; and they have demonstrated how environmental degradation contributes to more severe disasters including droughts, floods, and storm surges. A key challenge is how to integrate this knowledge into policy and planning. Multi-disciplinary approaches that combine ecology and engineering, science with sociology and economics have to be implemented. This book provides a sobering evaluation of the consequences of ignoring ecosystems in disaster risk reduction. But it also offers a range of well-considered and practical solutions which could be used in many existing regulations, policies and risk reduction activities.”

**Deborah Brosnan**, Environment and Policy Scientist, University of California, Davis, One Health Institute

“In 2004, the earth shook, the waters rose, and the Indian Ocean tsunami changed the world. Almost a quarter of a million coastal dwellers died that day. Several years later, the earth shook again, this time in Haiti, and a disturbingly similar number of people lost their lives. In both cases,

sustainable, healthy ecosystems could have substantially mitigated these disasters.

Recent disasters in Japan, the US East Coast, and several in SE Asia including Thailand and the Philippines, have led to a simple yet unsolvable question: How can the world's most vulnerable populations reduce the risk posed by natural hazards?

*The Role of Ecosystems in Disaster Risk Reduction* brings together the world's experts on how the natural environment has evolved tools to buffer against natural hazards in real, sustainable and cost effective ways. From coastal ecosystems that buffer large waves while providing valuable services to Indian Ocean communities to protective services that forests provide in the Swiss Alps, this book is a valuable contribution showing how environmentally and economically sustainable solutions can provide real benefits to exposed populations and resources."

**Brian G. McAdoo**, College Rector, Professor of Science, Yale-NUS College

"Why do ecosystems matter in disaster risk reduction? This book meets an urgent need. Intuitively we understand that working with and not against nature will help in protecting us from impacts of extreme natural events, but evidence has been lacking regarding the effectiveness and efficiency of such measures, particularly as alternatives to or in combination with engineered solutions. This rich collection of research findings and tested practices takes us around the globe, from coasts to forests, from agricultural landscapes to protected areas, from cities to mountains. It addresses conflicts between socio-economic development and environmental concerns, taken to its extreme in Cape Town where policymakers and planners have had to overcome the legacy of apartheid to find a sustainable trajectory. And it gives readers an array of methods and instruments to help overcome the sector and disciplinary stovepipes that often stand in the way of the holistic approaches needed to meet and reconcile multiple objectives: protecting vulnerable people and assets, halting the erosion of biodiversity and making sustainable use of our natural resource base. Those looking for the state of the art in ecosystem-based disaster risk reduction now know where to go."

**Johan Schaar**, Co-Director, Vulnerability and Adaptation Initiative, World Resources Institute

"With the human and economic losses of disaster events projected to grow, and with two-thirds of global disaster losses being caused by hydro-meteorological events, this is a very timely compilation of the evidence needed to link up ecosystem management with disaster risk management as mutually reinforcing initiatives. It comes at a time when the post-2015

development paradigm and framework for disaster risk management are on the drawing boards. It will surely go a long way in informing the convergence of policies and benchmarks for ecosystem management as an integral aspect of climate and disaster risk management, to ensure near-term development gains and long-term climate and disaster resilience.

An extremely timely and comprehensive publication, a game-changer in the approach to natural resource management for sustainable development – and for climate and disaster resilience.”

**Prashant Singh**, Team Leader, Partnerships and Governance, Global Facility for Disaster Reduction and Recovery (GFDRR) at The World Bank

“How do ecosystems relate to disasters? How do ecosystems contribute to disaster risk reduction (DRR)? This book gives us answers to these questions.

It is timely to address DRR-related coastal issues and water resources management, which are inevitable to countries being prone to water-related disasters such as storm surges and tsunamis as well as floods, droughts and erosion. Forestry and vegetation cover are also dealt with in relation to land management and landslides. These are serious problems which many parts of the world are facing in the twenty-first century under the pressure of sustainable development and survivable societies. Future perspectives are also given in concluding chapters.

This book will be of interest to disaster managers and policymakers, eco-hydrologists, coastal and water resources planners, engineers and managers, research scientists and students, international donor agencies, and many professionals from NGOs and the media.”

**Kaoru Takara**, Disaster Prevention Research Institute, Kyoto University, Japan

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