CLIMATE-INDUCED DISASTERS IN THE ASIA-PACIFIC REGION

COMMUNITY, ENVIRONMENT AND DISASTER RISK MANAGEMENT

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COMMUNITY, ENVIRONMENT AND DISASTER RISK MANAGEMENT VOLUME 22

CLIMATE-INDUCED DISASTERS IN THE ASIA-PACIFIC REGION: RESPONSE, RECOVERY, ADAPTATION

EDITED BY

ANDREAS NEEF

Development Studies, School of Social Sciences, University of Auckland, New Zealand

and

NATASHA PAULI

UWA School of Agriculture and Environment, and Department of Geography and Planning, University of Western Australia, Australia

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LIST OF CONTRIBUTORS

Carl Adams	Tearfund, New Zealand
Ashley Bartlett	University of Auckland, New Zealand
Lucy Benge	University of Auckland, New Zealand
Kahukura Bennett	Fairtrade Australia New Zealand, New Zealand
Bryan Boruff	University of Western Australia, Australia
Chanchhaya Chhom	Royal University of Phnom Penh, Cambodia
Savuti Henningsen	University of Western Australia, Australia
Gracie Irvine	University College London, United Kingdom
Andreas Neef	University of Auckland, New Zealand
Meg Parsons	University of Auckland, New Zealand
Natasha Pauli	University of Western Australia, Australia
Renata Varea	University of the South Pacific, Fiji
Mark Williams	University of Western Australia, Australia

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ABOUT THE CONTRIBUTORS

Carl Adams holds a Master of Arts in Development Studies from the University of Auckland. His interests include humanitarian coordination and bureaucratic impediments in disaster responses. He has recently worked in Bangladesh as Country Director with Swiss-based humanitarian agency Medair and now works as International Director with Tearfund New Zealand.

Ashley Bartlett holds a Master of Science in Environmental Management from the University of Auckland. Her interests lie in the intersection of climate change adaptation and sustainable development in the Oceania-Pacific region, and the ways in which marginalised people's knowledge can be incorporated into climate change resilience and adaptation planning.

Lucy Benge holds a Master of Arts in Development Studies from the University of Auckland. Her research interests include disaster-induced migration and displacement, climate change adaptation, disaster recovery and community-centred approaches to risk reduction and education.

Kahukura Bennett holds a Master of Arts in Development Studies from the University of Auckland. Her interests lie in the intersection of gender and sustainable development in the Pacific Islands. She currently works for Fairtrade Australia New Zealand.

Bryan Boruff is a Senior Lecturer in Geography at the University of Western Australia. His expertise lies in the application of geographic information system (GIS) and remote sensing technologies to the study of environmental hazards. His research interests encompass risk and vulnerability assessment, population health, sustainable livelihoods, urban and regional development and development of spatially enabled eResearch tools.

Chanchhaya Chhom is a Founder of Plankton Media, a social media platform for ecotourism and green messages in Cambodia. He has worked on projects and research in public policy, political analysis and within the energy and environmental sector, through the Royal University of Phnom Penh and Green Move Consulting. He is an accomplished author of Khmer poetry and songs.

Savuti Henningsen holds a Master of Environmental Science with a specialisation in Land and Water Management from the University of Western Australia. Her research interests lie in environmental management and statistical analysis of environmental data. She is a Tutor at the University of Western Australia and Murdoch University.

Gracie Irvine holds a Bachelor of Science with Honours in Physical Geography from University College London. She currently works in environmental consulting in London and specialises in the assessment of daylight, sunlight and overshadowing.

Andreas Neef is a Professor in Development Studies at the University of Auckland. His current research focusses on adaptation and resilience to climate change, climate-induced migration and displacement, post-disaster response and recovery and land grabbing. Most of his recent research has been conducted in Southeast Asia and the South Pacific.

Meg Parsons is a Senior Lecturer (Environmental Management) within the School of Environment at the University of Auckland. Her research examines the intersections between colonialism and climate change adaptation, and the ways in which Indigenous peoples' knowledge and experiences can be incorporated into climate adaptation plans and actions.

Natasha Pauli is a Lecturer in Geography at the University of Western Australia. Her research examines human–environment interactions in a range of settings from urban streetscapes to smallholder agriculture, with an emphasis on understanding how people perceive and manage ecological relationships under changing environmental conditions.

Renata Varea is a Research Associate with the School of Geography at the University of the South Pacific, Fiji. Her research interests include sustainable climate change mitigation strategies in Fiji. Her current research examines the effects of climate change and development on ecosystem services and the livelihoods of women, youth and minority groups in Ba.

Mark Williams holds a Master of Environmental Science with a specialisation in GIS from the University of Western Australia. He works as a Spatial Analyst for a Western Australian state government agency, where he uses spatial methods and technologies to help make communities in Western Australia more resilient to hazards.

PREFACE

Asia-Pacific is the world's most disaster-prone region, accounting for about half of the climate-related displacements of 19 million people that occurred globally in 2017. Climate-related, fast-onset hazards, such as floods, cyclones and typhoons, have claimed more lives, displaced a higher number of people and caused more damage than in any other world region over the past 20 years. In addition, Asia-Pacific countries are extremely prone to slow-onset climate-induced processes, such as sea level rise and extended droughts, as global atmospheric greenhouse gas concentrations continue to rise. Among these countries are several low-income nations, with persistent poverty in rural and coastal areas. The cost of short-term response to and medium- to long-term recovery from climate-induced disasters falls disproportionately on the poorest and most marginalised communities within the Asia-Pacific region. At the same time, long-term adaptation processes to climate-related hazards at the household and community level remain poorly understood. Increasingly, adaptation strategies need to address the challenges of multi-risk environments, whereby climate-related disaster risk is just one of many risk factors, alongside other potential environmental hazards as well as socio-economic and political–institutional risks.

This volume presents richly detailed qualitative research from diverse contexts across the Asia-Pacific region and adds to scholarship on the trajectory of community resilience and adaption to climate-related hazards. Drawing on case studies from Cambodia, Fiji, Solomon Islands and Samoa, the chapters examine various response, recovery and adaptation strategies at the local level, incorporating the perspectives and knowledge of affected individuals, households and communities.

The main questions addressed by the contributions in this volume are as follows:

- What are the perceptions among individuals, households and communities regarding the impacts of climate-induced disasters on their livelihoods?
- Is the post-disaster context the right time for implementing new development agendas and effecting social change?
- Which groups within coastal and rural communities are most vulnerable to climate-induced disasters? Are vulnerability and resilience gendered?
- Are disaster-affected communities involved in decision-making by humanitarian NGOs around post-disaster response and recovery processes?
- What are the factors that enhance or constrain disaster response and recovery by communities and organisations?
- Can scientific/expert knowledge and Indigenous/local knowledge be integrated to enhance community-based disaster risk management and climate adaptation?

- What types of adaptation practices and strategies have individuals, households and communities developed over time and how effective are these in a multi-risk environment?
- Are there trade-offs between individual adaptation mechanisms and community-based approaches to climate adaptation?
- How has planned relocation been constructed as a climate adaptation strategy among government actors and within intergovernmental agencies?

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We are particularly indebted to the scholars who made invaluable contributions to this volume by reviewing the various chapters, namely, Alexandra Peralta, Chanrith Ngin, Clare Mouat, Jamie Gillen, Karen Paiva Henrique, Lucy Benge and Sarah Prout Quicke.

A common message from the chapters of this book is for greater recognition and acknowledgement of local preferences and practices in disaster risk management and climate change adaptation. We hope that this volume gives voice to the wealth of local knowledge and views expressed by participants in the research, and demonstrates the importance of the social and cultural context in which post-disaster response and recovery efforts and community-based climate adaptation approaches take place.

Andreas Neef
Natasha Pauli
Editors

CHAPTER 1

CLIMATE-INDUCED DISASTERS IN THE ASIA-PACIFIC REGION – FROM RESPONSE AND RECOVERY TO ADAPTATION

Andreas Neef and Natasha Pauli

ABSTRACT

Multi-risk environments pose challenges for rural and coastal communities in the Asia-Pacific region, particularly with regard to disaster risk management and climate change adaptation strategies. While much research has been published on disaster response and recovery for specific climate-related hazards in the region, such as cyclones, floods and droughts, there is a growing need for insight into how communities respond, recover and adapt to the multiple, intersecting risks posed by environmental, societal and economic change. This chapter frames the body of new research presented in this book from the perspective of multi-risk environments, paying particular attention to concepts central to the disaster response and recovery cycle, and rejecting the notion of a distinct boundary between climate and society. Further, this introductory chapter foregrounds the importance of cultural values, power relations, Indigenous knowledge systems, local networks and community-based adaptive capacities when considering resilience, recovery and adaptation to climate-induced disasters at the community and household level. Overviews of the research presented in this book demonstrate a diverse range of responses and adaptive strategies at the local level in case studies from Solomon Islands, Fiji, Cambodia and Samoa, as well as implications for policy, planning and management.

Keywords: Disaster; hazard; climate change adaptation; resilience; Southeast Asia; Pacific Islands

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INTRODUCTION: THE MAKING OF ASIA-PACIFIC AS A RISK-PRONE REGION

The Asia-Pacific region is arguably one of the most disaster-prone regions in the world. According to the latest World Risk Report, six Pacific Island nations and four Asian countries are among the 20 countries facing the highest disaster risk globally (Bündnis Entwicklung Hilft & IFHV, 2019). Climate-related, fast-onset hazards, such as floods, cyclones and typhoons, have claimed more lives and caused more damage over the past 20 years in countries of the Asia-Pacific than in any other world region. In addition, these countries are extremely prone to slow-onset climate-induced processes, such as sea level rise and extended droughts, as global atmospheric greenhouse gas concentrations continue to rise. Among these countries are several low-income nations, with persistent poverty in rural and coastal areas, which carries significant socio-economic risks. Yet, the devastation wrought by bushfires in southeastern Australia that burned a globally unprecedented percentage of forest biome between September 2019 and February 2020 (Boer, Resco de Dios, & Bradstock, 2020) is a stark reminder that the so-called developed countries are also becoming increasingly vulnerable to climate-related disaster risks.[1] This seems to challenge the views of mainstream disaster risk scholars who have argued that adaptive capacities of countries

> largely depend on their economic status. Generally, developed countries have higher adaptive capacities while developing and least developed countries, which are most vulnerable to climate change, need external support to build theirs. (Francisco, 2008, p. 8)

This simplistic view which also implies a dependency of 'underdeveloped' countries on support from rich, 'developed' countries has been challenged by such authors as Bankoff (2019, p. 234) who argues that Western discourses of disaster risk management accept disaster, disturbance and crisis as 'an endemic condition' of the Global South and McDonnell (2019, p. 2) who criticises 'disaster responses that see the "community" as a space to be acted upon by outsiders'. Common to these Western discourses and outsider-driven interventions in response, recovery and adaptation is a dismissal of Indigenous knowledge systems, local resilience networks and community-based adaptive capacities that exist in many 'at-risk' countries in the Asia-Pacific region.

Partially in response to such Western-centric discourses, there has been a resurgence of studies emphasising the critical role that cultural values, power relations, social norms and local knowledge play in determining resilience, recovery and adaptation at the community and household level (e.g. Fletcher et al., 2013; McDonnell, 2019; Naess & Twena, 2019; O'Brien, 2009; O'Brien & Wolf, 2010; Woroniecki et al., 2019). Numerous studies have been conducted on disaster response and recovery in the context of a specific climatic hazard event in Asia-Pacific countries (e.g. Johnston, 2014, for cyclones in Fiji; Akbar & Aldrich, 2018, for floods in Pakistan; Nguyen & Shaw, 2015, for droughts in Cambodia). Yet, to date, few studies have acknowledged the particular challenges that multi-risk environments pose for disaster risk management and climate adaptation strategies in rural and coastal communities of the Asia-Pacific region (Neef et al., 2018; Warrick, Aalbersberg, Dumaru, McNaught, & Teperman, 2017). Rural communities along the Mekong

River in Cambodia, for example, have adapted very well to seasonal floods over the past decades, but – more recently – have been forced to also adjust to increasingly frequent heatwaves, droughts and storm events (Henningsen, Pauli, & Chhom, 2020 – Chapter 7, this volume; Williams, Pauli, & Boruff, 2020 – Chapter 6, this volume; Yamamauchi, 2014). In Cambodia, additional risks are posed by non-climatic factors, such as logging, land grabbing and upstream hydropower dam construction (e.g. Grumbine, Dore, & Jianchu, 2012; Neef, Touch, & Chiengthong, 2013). Numerous coastal communities in Fiji, a South Pacific Island nation, have experienced a series of rapid-onset climatic hazards, such as floods and cyclones, while also having been subjected to slow-onset climate-associated processes, such as extended droughts and sea level rise, as well as upstream deforestation and mining over the past decade (Bennett, Neef, & Varea, 2020 – Chapter 5, this volume; Irvine, Pauli, Varea, & Boruff, 2020 – Chapter 4, this volume; Neef et al., 2018). These are only a few examples of how rural and coastal communities in the Asia-Pacific region are increasingly exposed to a multitude of climatic and non-climatic risks, which require diverse adaptation strategies and may complicate disaster recovery cycles.

DEFINITIONS AND CONCEPTS

For the purpose of this book, we adopt Aldrich's (2012, p. 3) definition of *disaster* as 'an event that suspends normal activities and threatens or causes severe, communitywide damage'. *Climate-induced disasters* encompass hydrological (e.g. floods, landslides), meteorological (e.g. storms, heatwaves) and climatological (e.g. droughts, wildfires) events (CRED & UNISDR, 2018). In line with Taylor (2015, p. 11), we object to the 'ontological division between climate and society' and the imposition of artificial 'boundaries between the assumed "natural" and "social" worlds' which represents 'climate change as an exogenous force that manifests itself in the form of external shocks to an otherwise independent society'. Hence, we acknowledge that climate and society are co-produced and mutually constitutive.

Disaster response refers to the immediate post-disaster relief efforts, which includes – for instance – search and rescue operations, mutual assistance at the community level, evacuation of affected populations to temporary shelters and provision of food and water rations. *Disaster recovery* commences when the immediate threats to human security and property have been resolved, and individuals, households and communities can start to re-establish their livelihoods and return to their pre-disaster conditions and routines (Akbar & Aldrich, 2018). The notion of *disaster recovery* does not simply refer to physical, infrastructural and economic recovery but also includes social, cultural and psychological recovery of affected individuals and communities (Aldrich, 2012; Nakagawa & Shaw, 2004; Neef & Shaw, 2013). As some of the chapters in this book will demonstrate, the speed and depth of recovery are highly uneven within and across communities and depend on a myriad of factors. These factors may include – but are not limited to – the amount of disaster damage, socio-economic conditions, demographics, the quality of governance, social capital and the amount of external aid (Aldrich, 2012; Yila, Weber, & Neef, 2013). Yet, as several studies have shown,

distribution of aid does not always lead to a faster and more equitable recovery process but may engender a particular 'politics of distribution' (Ferguson, 2015, p. 10, cited by McDonnell, 2019, p. 10; see also Adams & Neef, 2019).

Resilience is a concept that has been linked closely to recovery and often described as the ability of a system (e.g. a community or a household) to absorb shocks and disturbances and to 'bounce back' and regain stability (Béné, Newsham, Davies, Ulrichs, & Godfrey-Wood, 2014; Brown, 2016). *Vulnerability* is sometimes used as an antonym of resilience, yet is more commonly described as a function of exposure, sensitivity and (lack of) adaptive capacity (e.g. Callo-Concha & Ewert, 2014; Smit & Wandel, 2006). Yet, among social scientists, there is an increasing consensus that *vulnerability* is not so much an endemic condition or innate property of a social-ecological system but rather a consequence of global and local power differentials, marginalisation of certain groups based on race, caste, class or gender, and entrenched institutional, political and material inequalities (e.g. Taylor, 2015). As Adger (2006, p. 270) puts it, 'vulnerability is driven by inadvertent or deliberate human action that reinforces self-interest and the distribution of power in addition to interacting with physical and ecological systems'.

Climate change adaptation has been defined by Smit, Burton, Klein, and Street (1999, p. 200) as 'adjustments in ecological-socio-economic systems in response to actual or expected climate stimuli, their effects or impacts'. In a similar vein – and with an added positive spin – the IPCC (2007, p. 809) defines adaptation as 'adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities'. Recently, scholars have drawn attention to community adaptation processes as the locus of power contestations and micropolitics, which challenges apolitical and technocratic discourses and practices (e.g. Tschakert et al., 2016; for an overview of the body of literature, see Woroniecki et al., 2019). Of particular relevance for the contributions to this volume and the concept of multi-risk environments is Pelling's (2011, p. 60) notion of 'transformative adaptation' which entails social learning processes and creative integration of local and scientific knowledge which 'can respond to the multiple scale[s] and sectors through which risk is felt and adaptations [are] undertaken'.

STRUCTURE OF THE BOOK

The remaining eight chapters of this volume explore responses to, recovery from and adaptation to climate-induced disasters in various multi-risk environments in the Asia-Pacific region. The authors of these chapters are critical of external interventions into complex social and cultural fields and call for a greater acknowledgement of local knowledge, preferences and practices in disaster risk management and climate change adaptation. They are also committed to research methodologies that are not only ethically sound but also culturally appropriate. This includes participatory methods used in the two Cambodian case studies and Pacific research methodologies (e.g. *talanoa* – a form of casual conversation and sharing stories) employed in the case studies from Solomon Islands, Fiji and Samoa.

Through an analysis of three consecutive United Nations disaster risk reduction frameworks, Chapter 2 – written by Lucy Benge and Andreas Neef – examines how disasters have been increasingly constructed as opportunities for development. The authors raise the question whether the post-disaster context is the right time for implementing development agendas given the potential for recovery to be co-opted by dominant development ideologies. The chapter explores how the flow of knowledge, expertise and technology from the Global North to the Global South has contributed to turning 'vulnerable' populations into objects to be managed and directed towards 'progress'. This involves understanding 'vulnerability' and 'underdevelopment' as labelling techniques, which are used by institutions, disaster experts and bureaucracies as a way of justifying disasters as opportunities for change. Thereby, the act of defining 'disaster' becomes a political tool for implementing particular ideas of change and progress. As an alternative, Benge and Neef examine how disasters can be used to implement dominant institutionalised ideas of progress, while also offering opportunities to disrupt status quo approaches to development.

In Chapter 3, Carl Adams and Andreas Neef examine how communities and non-governmental organisations (NGOs) in the Solomon Islands viewed the response to a severe flash flooding event in April 2014. It starts by exploring the ways in which communities interpreted and responded to the disaster, and identifies factors that assisted and constrained stakeholders in disaster response and recovery efforts. The study further investigates to what extent communities were actively involved in NGO responses and determines the factors that informed community–NGO relationships. Findings suggest that women, youth and people with disabilities were largely excluded in post-disaster decision-making processes, thereby exposing these at-risk groups to secondary disasters. The study also found that humanitarian NGOs largely overlooked ideas, knowledge and capabilities at the community level. The authors argue for greater inclusion of those affected by disaster and call for progressive improvements to disaster relief and recovery efforts based on reflexive practice.

In Chapter 4, Gracie Irvine, Natasha Pauli, Renata Varea and Bryan Boruff present findings of qualitative research conducted in three Indigenous (*iTaukei*) communities along the Ba River in Viti Levu, Fiji, with a particular focus on recent floods (2009, 2012) and Tropical Cyclone Winston (2016). Employing participatory mapping as a tool to elucidate communities' understanding of the differing impacts of multiple hazards, the authors find that communities draw on a wide range of livelihood strategies from fishing and agriculture to community-based tourism and outside work. Climate-induced hazard events vary in their impact on these livelihood strategies across the land- and seascape, imposing particular challenges on community members' adaptive capacity, local knowledge and ingenuity. The ways in which people modify their use of the various natural resources in response to the impact of climate-induced hazards demonstrate the importance of taking a broad land- and seascape approach in planning for multiple, potentially competing resource uses in multi-risk island environments.

Chapter 5 – written by Kahukura Bennett, Andreas Neef and Renata Varea – draws on local experiences and situated narratives of 2016 Tropical Cyclone

Winston in two *iTaukei* Fijian communities – the coastal village of Votua and the highland village of Navala – to provide a nuanced account of gendered responsibilities, vulnerabilities and resilience in the context of climate-induced disasters. Rather than providing a generalising and essentialising account of the role gender plays in disaster impact and recovery, the chapter presents an array of experiences that emerge as women and men negotiate opportunities to provide for their families and adapt to multiple, intersecting inequalities including the exposure to climatic threats. Surprisingly, the perception of gendered vulnerability was largely absent from respondent narratives. Roles and responsibilities were predominantly perceived as changing over time, either to a more shared sense of responsibilities or a shift from male responsibilities to female. The study concludes that conceptualising vulnerability as arising from a broad range of interacting social factors provides more in-depth insights into spaces behind unperceived vulnerability.

In Chapter 6, Mark Williams, Natasha Pauli and Bryan Boruff examine how people in four rural communities along the Mekong River in Kratie Province, Cambodia, perceive the effects of environmental change and how these perceptions influence present and future adaptation strategies. The authors found that villagers had employed complex adaptive strategies to deal with regular floods and have started to adopt changes that may help adjust to the impact of reduced rainfall and increased temperature as a result of local climatic changes. The adaptive strategies that are used by communities were wide-ranging and represented all five classes of adaptation practice as defined by Agrawal and Perrin (2008), that is, mobility, storage, diversification, communal pooling and market exchange. The study demonstrated the usefulness of combining community-based focus groups with participatory mapping as a low-cost, spatially explicit method of identifying locally relevant opportunities and challenges to climate change adaptation in small, flood-prone communities of the Lower Mekong region.

Chapter 7, written by Savuti Henningsen, Natasha Pauli and Chanchhaya Chhom, explores temporal seasonal variability in four riverine communities of Kratie Province, Cambodia, and identifies locally developed and gendered strategies to adapt to temporal changes in weather patterns. Combining historical hydrometeorological data with participatory seasonal calendars and daily routine diaries, the study finds that patterns in rainfall, flooding and drought have become more variable and less predictable, a phenomenon that will likely continue into the future. Future temporal impacts of climatic change combined with alterations in flow from the development of hydropower dams upstream are likely to hold adverse impacts for these communities, due to their strong reliance on seasonality for their agriculture-based livelihoods. Individuals and communities in the study region have developed a wide range of approaches to mitigate the adverse impacts of environmental change. This chapter reiterates the importance of incorporating both local knowledge and scientific data to gain the most accurate understanding of the impacts of environmental change in a given region.

Chapter 8 – written by Ashley Bartlett, Meg Parsons and Andreas Neef – presents an exploratory study conducted in the Pacific Island nation of Samoa into the impact of private household insurance on people's willingness to engage in community-based climate adaptation projects. The study finds that individuals

whose homes were insured with natural perils insurance were more likely to express more individualistic values and attitudes than those without natural perils insurance. Insured homeowners tended to frame adaptation as a technical challenge, with insurance being part of the technical and expert-led approach to prepare for, manage and recover from extreme events. In contrast, householders without insurance perceived climate change adaptation as less of a technical and more of a social process. Correspondingly, research participants with private natural perils insurance coverage were less engaged in community-based adaptation projects compared to participants without insurance. Given the importance of household participation in community-based adaptation projects in small island developing states of the South Pacific, these exploratory findings suggest that an increased uptake of private insurance may have problematic outcomes for the adaptive capacity of the broader community.

In Chapter 9, Lucy Benge and Andreas Neef explore the discursive creation of planned relocation as a form of climate change adaptation and development in the case of Fiji. Their study critiques the way in which powerful actors – including intergovernmental agencies providing funding to support relocations – frame climate-related community relocation as 'adaptive strategies', while for affected communities these strategies feel neither voluntary in a context of limited alternatives nor adaptive, but are rather experienced as a form of loss and damage. Grounded in the discussion of the concept of *vanua* and Fijian systems of Indigenous land custodianship, the authors discuss how broader technical narratives regarding relocation as a strategy to reduce climate-related vulnerabilities need to more carefully consider the cultural, spiritual and social vulnerabilities that such approaches can heighten. The chapter also speaks to the problems of characterising relocation in overly simplistic and environmentally deterministic ways, which fail to account for the complex political and economic factors that can render some peoples more vulnerable to the impacts of natural hazard events and/or slow-onset environmental change.

We hope that these chapters will stimulate further research and critical debate among human geographers, development studies scholars, anthropologists and other social scientists in the field of disaster risk management and climate change adaptation. Some of the chapters may also inform policy making for improved post-disaster response and recovery and more inclusive community-based climate adaptation approaches.

NOTE

1. See, for example, recent research detailing: increased flooding in northwestern Europe linked with climate change between 1960 and 2010 (Blöschl et al., 2019); projected future transformational change in fire regimes in southern Australia (Boer et al., 2016) and partial attribution of the 2019–2020 Australian fires to anthropogenic climate change (van Oldenborgh et al., 2020); and increased hurricane risk in the United States (Pant & Cha, 2019).

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