

# Chapter 1

## Crossing Borders: Governing the Globalising Urban Matrix of Compound Disasters in Asia and the Pacific

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### 1.1 Introduction

The Asia-Pacific<sup>1</sup> is more prone to cross-border disasters than any other region on earth. Home to four of the world's most active fault lines, which traverse multiple countries across thousands of kilometres (UNESCAP 2016), the region is highly vulnerable to cross-border earthquakes, tropical cyclones, transboundary floods, volcanic eruptions, erratic monsoons and droughts. With its major riparian regions originating from the receding glaciers of the Tibetan Plateau, it is also experiencing increasing risks of disasters in food production, livelihoods, water distribution and natural habitats that are affecting billions of people.

In pace and magnitude, the Asia-Pacific is also one of the most rapidly urbanising parts of the world. Its spectacular urban transition,<sup>2</sup> industrialisation and rural to urban migration flows have generated additional vulnerabilities through the production of extended urban agglomerations, many of which are located at or below sea level along coastlines or in river basins. In this context of unabated urban growth, these expanding spatial concentrations are exposing the inhabitants of dense settlements to environmental threats linked to the effects of climate change, as oceans rise and as unusual weather events become more frequent. This urban transition has been accompanied by environmentally unsound practices in cities that have produced new forms of vulnerability, exacerbated by anthropogenic transformations of coastal zones, marshlands and floodplains, creating unstable hillsides and other geographical conditions unsafe for human habitation (Miller and Douglass 2016a).

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<sup>1</sup> We use the term Asia-Pacific in this volume to denote our geographical focus on East, South and Southeast Asia and Pacific island nation-states.

<sup>2</sup> Sixty-four percent of Asia's population is projected to be urban by 2050, meaning that the existing urban population of 1.6 billion is envisaged to almost double to 3.1 billion people (United Nations 2014, p. 1; Asia Development Bank 2011, p. 6).

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As urbanisation generates extensive flows of resources to and from rural and remote areas to cities, the Asia-Pacific region is becoming enmeshed in a highly interdependent urban matrix that further increases vulnerabilities through the compounding impacts of disasters, raising new questions about governance across international borders. For example, the great riparian regions of Asia map onto multiple nation-state borders that were arbitrarily drawn along post-colonial lines. With greater interdependencies along these river systems, there is increased potential for long-standing territorial disputes to erupt in times of crisis and displacement (Lebel et al. 2005). Likewise, along the mainland border corridors of the Asia-Pacific, anthropogenic interventions in nature—in the form of environmentally damaging megaprojects that service the growing demands of rapidly urbanising populations—are incubating new forms of cross-border environmental harm.

This book explores how, and to what effect, environmental disasters with compounding outcomes are being governed as they traverse national borders in the urbanising societies of Asia and the Pacific. Cross-border disasters are becoming ever more frequent and costly in our global urban age, just as scholars and policy makers are becoming ever more aware of the cross-border governance dimensions of these long-standing phenomena. Yet the division of the world into sovereign nation-states has meant that environmental disruptions continue to be treated primarily as domestic concerns in which the balance of power rests with national governments. Despite vocal calls from non-governmental organisations (NGOs), social movements, activists and private businesses, among others, for the creation of an enforceable global environmental governance system to address “accountability deficits” in responding to what Michael Mason (2008) calls the flow of “transnational environmental harm”, attention to the inter-scalar challenges of cross-border disaster governance remains a nascent field of enquiry (Reed and Bruyneel 2010, p. 649; see also Malets 2013). In practice, nation-state borders present intractable barriers to cooperation and collaboration, even in such basic actions as information-sharing between neighbouring administrations within the same country. Sub-national authorities are rarely included in cooperative international cross-border disaster efforts, which tend to overlook or ignore local coping strategies and inter-generational knowledge of mechanisms for generating resilience to future or reoccurring disaster risks and impacts.

In preparing for large-scale disastrous events across borders, extensive collaborative planning is required to address the diverse needs of the populations at risk and to ensure that human and material resources can become readily available when official governing capacities become overwhelmed (Edwards 2009; Claringbull 2007; Wang 2013). As noted above, non-governmental organisations and international donors are cognisant of this need and many are engaged in efforts to traverse major jurisdictions to provide disaster relief, although the national legal frameworks that permit their activities on condition of political neutrality impose strict operational constraints (Hannigan 2012). National governments with relief agencies operating beyond disaster zones, international organisations such as the United Nations and non-profit organisations such as the Red Cross are taking on first responder roles in many instances. For major disasters, the militarisation of disaster

governance has become a significant form of international intervention. These, too, signal a new era in which the political spaces of disaster governance extend well beyond borders and engage in issues of diplomacy as well as disaster relief.

City and municipal governments are also reaching beyond their own administrations to provide assistance when disasters occur or when environmental migrants appear from other localities. The shifting urban dimension of cross-border disasters in the Asia-Pacific and the multiple scales at which catastrophic events are occurring calls for a fundamental realignment in our thinking about how the complex dynamics of disasters should be spatially conceived and governed across scales.

Sometimes, the political ruptures resulting from a disastrous event usher in progressive transborder networks, relationships and agreements around shared problems, technologies and converging knowledge systems. These networks of cooperation regarding issues such as environmental conservation, social justice and the politics of land ownership are bringing people into conversation across administrative divides and are encouraging new voices in disaster governance activities and programs. As the decentralisation of governance to sub-national administrations continues to make headway in the Asia-Pacific, cities and towns rather than nation-states are emerging as engines of policy innovation in dealing with disasters that are difficult to map onto administrative jurisdictions (Miller and Douglass 2016b). City governments, for instance, have been strident advocates of urban governance for climate protection via purposeful interventions in urban socio-technical systems that traverse, and occasionally overcome, traditional distinctions between local, national and global environmental politics within and between countries (Bulkeley and Betsill 2005; Bulkeley and Broto 2013). Such mobilities act as spaces of hope through which to facilitate more inclusive and effective regimes of cross-border governance.

The contributors to this book came together at the *Conference on Crossing Borders: Governing Environmental Disasters in a Global Urban Age in Asia and the Pacific*, held at the Asia Research Institute, National University of Singapore in November 2015. They set out to address policy-relevant questions about the governance of compound disasters across national borders in the urbanising societies of Asia and the Pacific. Key questions guided the discussions. How can the kinds of environmental disasters that are traversing sovereign territories in the Asia-Pacific be conceptualised as problems of inclusive and collaborative governance rather than as technical, expert-driven managerial tasks? What policy innovations are providing redress for the multi-sector impacts of compound disasters reaching across national borders, and how well are they working? To what extent are governing institutions able to securely resettle environmentally displaced people who are forced to migrate across international borders? In what ways do shared experiences of cross-border disasters highlight or transform power relations within and between localities? And, can we use the lens of compound disasters to think about urban networks as part of a changing planetary ecology in the service of building more meaningful collaborations across nation-state borders?

Each of the chapters in this book considers a sub-set of these questions, interrogating the theoretical and empirical dimensions of scale and spatiality in governing

disasters across urbanising countries in the Asia-Pacific. Collectively, they address a number of important areas that have been both understudied in the literature on cross-border disaster governance and which remain largely absent from policy programs. A reoccurring theme throughout this volume is the urban imperative of cross-border disaster governance that requires mainstreaming in all dimensions of preparedness, response, adaptation and resilience. Most scholarship on cross-border disasters locates analysis of the politics of scale at the level of the nation-state, while overlooking the paradox of urban settlements as both perpetrators and victims of cross-border disasters (Hodson and Marvin 2010; Miller and Douglass 2015). Yet energy-demanding cities are the primary producers of greenhouse gas emissions that substantially contribute to global climate change, just as dense populations in vulnerable locations are disproportionately impacted by climate change-related severe weather events and rising sea levels. In our global urban age of human-generated changes to the earth's life support systems, it is therefore cities that require greater attention in studies of the anthropogenic risks and compounding impacts of disasters once thought to have been natural and confined to specific sites and moments.

## 1.2 Rethinking Disaster Geographies

Our focus on the urban dimension of cross-border disasters locates urban settlements within an inter-connected urban-rural matrix of delineated spatial scales of governance ranging from the neighbourhood to the city, province, nation-state, transborder riparian region and even the global scale. This matrix allows us to consider how the expanding ecological reach and demands of urban agglomerations into rural and remote areas have contributed to an escalation in environmental disasters with compounding and far-reaching effects (Douglass 2016). The growing ecological footprint of urban energy demands has also contributed to a spike in what Alexander Betts (2013) coined “survival migrants”, denoting those vulnerable irregular migrants who are forced to leave their home country because of an existential threat such as climate change, food insecurity or livelihood collapse, against which no domestic remedy is readily available. Urban energy demands are reshaping the countryside through mega-projects such as hydropower dams, reservoirs and oil and gas pipelines as well as through environmentally degrading modes of commercial production. These in turn are increasing the prevalence of floods, landslides and other environmental disasters, with cascading impacts that flow across national borders to create threats, vulnerabilities and hazards at multiple scales. All of these dynamics attending the urban transition in the Asia-Pacific require new ways of thinking about how the emerging geographies of compound environmental disasters can translate into more inclusive and innovative modes of cross-border governance.

A related conceptual contribution of this volume is our approach to compound disasters, a term used with growing frequency since the mid-1990s to describe the

adverse consequences stemming from different but related disaster agents (ICLA 1996; cited in Wachira 1997, p. 109). Compound disasters may occur either in series or in parallel, such as an extreme weather event that floods a city and contaminates water supplies to produce a health pandemic with feedbacks to regional economies, with implications for building social resilience to future disasters. In the disaster-prone Asia-Pacific region, cross-border events with compounding impacts across multiple countries are all too common. In July 2015, for instance, Cyclone Kommen swept across India, Bangladesh and Myanmar, triggering floods and landslides that killed almost two million people. An earthquake in Nepal in April the same year generated multiple landslides (many of which were linked to environmentally damaging development projects) that blocked rivers and heightened flood risks in neighbouring Bangladesh, China (including the Autonomous Region of Tibet) and India (UNESCAP 2015, p. 6).

Through our focus on the urban dimension of compound cross-border disasters, we extend our conceptual lens to include a phase of incubation that begins well before the initial catastrophic event. By this, we mean that compound disasters are incubated in the socially and spatially uneven geographies of urbanising populations, which impact societies disproportionately and render certain groups especially vulnerable, namely the poor, ethnic minorities, informal settlers, the elderly, handicapped, women and children. Compound disasters are equally incubated in the anthropogenic interventions into nature that generate multiple causalities of environmental harm that become magnified through their socioeconomic impacts. Activities that serve the growth of cities such as deforestation, burning croplands for palm oil plantations, hydraulic fracking for oil, mining, mega-dams generating hydropower, and the production of nuclear energy assault local ecologies. They boomerang back to cities in the form of floods, air pollution and radioactive fallout from nuclear power plant failures. These spatially extensive compound effects increasingly traverse national political boundaries, with the extreme example being global climate change that is largely being generated by cities.

Posing the problem of cross-border compound disasters as a question of governance rather than disaster management is another contribution of this volume to the disaster studies literature. The task of the following chapters is to move beyond prevailing managerial approaches that privilege sector-driven expertise with its disproportionate emphasis on physical infrastructure, and to treat cross-border disasters as political phenomena embedded in unequal human geographies. Such an approach necessitates comprehensive multi-sector, multi-scalar analysis and responses. To the degree that governance has featured in scholarship on cross-border disasters, its main focus has been on disaster diplomacy underpinned by international agreements. Such diplomacy is typically aimed at responding to immediate threats and crises, especially in relation to traditional and non-traditional security issues and international humanitarian missions, usually at the expense of grounded empirical research on the underlying complexities of cross-border disaster causalities (Webersik 2010; Brauch et al. 2011; Elliot and Caballero-Anthony 2013). Locating cross-border disasters within the realm of governance also allows us to move away from silos of technical expertise and operational procedures to illuminate

the politics of governance that encompass the full range of formal and informal actors, institutions and processes across transborder spaces at every scale. Through this wide approach to governance, the overall goal of the volume is to enhance our understanding of the complexities of cross-border disasters, with a view to developing more inclusive and effective policy choices that can link knowledge to practice in the dynamics of messy, real-world situations fraught with socio-spatial disparities.

### 1.3 Governing Disasters Across National Borders

The role of the national border in times of disaster has changed since the emergence of nation-states. These changes manifest in shifts in the degree to which borders are open or closed to such flows as resources, capital, people, information, and, more generally, the power to govern over a territorially defined space. Nation-states formed in seventeenth century Europe around ideas of religious homogeneity were designed to confer territorial divisions of power aimed at ending internecine wars among imperial domains by instilling respect for the boundaries of sovereign states and encouraging non-interference in domestic affairs. In Asia, at the height of Western imperialism, these same principles were used to organise and protect trade routes along colonial borders, as is described by Fiona Williamson in Chap. 3 of this volume.

In the modern nation-state, border control has fluctuated in the governance of flows of transnational environmental harm. Just as national boundaries loosely map the jurisdictional realm of governmental responsibility for environmental protection, they also obscure the terrain of responsibility for ecological destruction (Mason 2008; Elinoff and Vaughan [forthcoming](#)). The border continues to be regarded as a fixed space of containment because disasters are typically treated as a function of sovereignty in which national governments retain responsibility for dealing with crises that originate within their sovereign territories, only accepting offers of outside assistance when domestic coping capacities become overwhelmed.

Disasters are challenging these contemporary uses of the border to control external relations in three interrelated ways. First, disasters increasingly have sources and consequences that transcend national boundaries. Chemically poisoned rivers, riverbed erosion and destabilisation caused by water released from upstream megadams in nearby countries, and severe air pollution create cross-border political confrontations. The second challenge to border control, as examined by Anthony Reid in Chap. 2 of this book, manifests through the intersections between international humanitarian assistance and the spread of information through digital media that open disaster-prone countries to political leverage tied to financial and moral claims for political reform. The third challenge is disaster-induced migration, which does not tend to result in official recognition for disaster refugees, but are increasingly visible as collateral migration from collapsing economies, political upheaval and failed or failing production systems.

Taken together, these overlapping factors bring into view the symbolism of the border as a political line of negotiation over how disasters in the twenty-first century need to be governed across rather than simply within nation-states. As this collection highlights, the prevailing pattern is one of slow, piecemeal accommodation of external political pressures for greater transparency and the standardisation of processes of disaster mitigation with very little change to national migration systems. However, the cases brought together here also show how the disruptions of disasters can, and occasionally do, create unexpected openings for political reform and cooperative forms of cross-border governance.

The Asia-Pacific region has no supra-national body with powers to enforce agreements among national governments in managing the environmental commons or in adjudicating claims arising from cross-border disasters. Cross-border disaster governance thus becomes a process of negotiation that can remain indefinitely unresolved. With international standards and accountability frameworks lacking, donor organisations are pushing for sweeping changes in the governance of assistance within recipient developing countries in particular. For example, the Organisation for Economic Cooperation and Development (OECD) calls for standardising aid processes through reforms that include popular participation in implementing and giving feedback via coherent domestic policies and through compliance with international humanitarian law. Similarly, the United Nations, which organised the first World Humanitarian Summit in 2016, promotes the idea of a “Global Compact” to take advantage of all actors’ complementary roles in strengthening supra-national regional capacities to prevent, manage and respond to disasters. These moves represent a substantial leap in attempts to govern disasters above the level of the nation-state through assistance programs. They also signal the emergence of a new era of cross-border disaster governance. As Anthony Reid and John Hannigan highlight in Chaps. 2 and 5 of this book, respectively, this is an era in which international organisations now see an unending, long-term need for providing humanitarian assistance via the establishment of global rules. It is also an era in which disasters have spawned a global aid industry, which in 2015 employed at least a quarter of a million people worldwide.

International disaster migration efforts in the Asia-Pacific have been complicated by the demarcation of national borders along colonial lines. One result of this colonial inheritance has been the artificial incorporation of dispersed ethnic minorities into national spheres without being assimilated into a shared national identity or related acceptance of state sovereignty (Miller 2012, pp. 2–3).<sup>3</sup> These sovereignty disputes have sometimes been brought to the political fore by, and settled through, catalytic ruptures of a disaster event. For example, the borders of Indonesia, Sri Lanka and Thailand were reinforced by the 2004 Indian Ocean tsunami and undersea earthquake. A protracted armed nationalist struggle in Aceh was democratically

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<sup>3</sup>Even in Thailand, where no formal colonisation took place, the borders of Siam, as Thailand was called until 1939, and from 1945 to 1949, were to shaped by the independence agreements between British and French colonial powers and the newly independent nation-states of neighbouring Malaysia, Myanmar, Laos, Vietnam and Cambodia.

resolved in Indonesia's favour in the window of political opportunity that was generated by the disaster (Miller 2009). By contrast, the governments of Sri Lanka and Thailand used the opportunity created by the tsunami to militarily repress their separatist insurgencies (Åkebo 2016).

More commonly, however, environmental disasters in the Asia-Pacific have not produced high levels of armed conflict or the redrawing of national borders. Usually, disasters expose the everyday differential porosities of state boundaries, including the limits of territorially demarcated understandings of responsibility and containment. Such porosities vary not only by country and governance regime, but also by the types of flows of environmental harm and the narratives that surround them at different political moments (Mitchell 1997, p. 105; see also Cunningham 2012, pp. 373–374). For instance, how a national government responds to the perpetrators of air and water pollution within its territories can determine the extent of the flow of ecological harm into surrounding countries, as well as the likelihood of recurrent episodes of chronic cross-border pollution. When states are unable to deal domestically with the impacts of cross-border disasters, national political systems may be destabilised, igniting wider unrest. This can happen, for example, when people displaced by a drought or a famine in rural areas converge upon an urban centre to demand compensation, or when “survival migrants” seek refuge in neighbouring countries, sparking regional instability (Kelman 2003, p. 119; Betts 2013; Global Humanitarian Assistance 2015).

Projections along several fronts suggest that the movement of disaster victims across national borders will continue to escalate in the coming years. The 25–30 million environmental refugees estimated to exist globally in 2007 are projected to increase to a total of between 200 and 300 million by 2050 (Asia Development Bank 2011). This includes migrants impacted by global climate change, especially sea rise. Pacific islands are particularly susceptible to sea rise, and since many are small island states, any migration is necessarily international. While the number of environmental disaster refugees going across national borders is reportedly not large, it would likely increase manifold times if the compound effects of disasters were included. Land degradation, mega-dam impacts, water pollution and many other factors related to environmental change can result in migration not registered as disaster refugee movement. In addition, the millions of people who work abroad in remittance economies across the Asia-Pacific is expected to rise from negative impacts on traditional livelihoods and ways of life. As evidenced in Nepal following the 2015 earthquake, both emigration to foreign countries and remittances back to Nepal surged following the disaster. With 30 % of its GDP already coming from money sent back to Nepal by its workers abroad, the earthquake heightened Nepal's slide into a remittance economy.

National governments representing nation-states play an active role in rendering the border either obdurate or flexible in the face of environmental harm. When investment opportunities and national strategic interests are at stake, state actors and institutions are more likely to subvert the territorial logic of the state, or to deploy what Mountz and Hiemstra call a strategy of “flexible sovereignty” (2012, p. 468). They do this by pursuing destructive development projects in borderland zones



where national environmental regulations are less enforceable, and in ways that obscure state responsibility for environmental harm through, for example, collusion with local and national companies, intra-regional firms and multinational corporations.

This rendering of the idea of the border as a space of exception has been the subject of growing scrutiny in the aftermath of the 9/11 terror attacks on the United States, when the offshore detainment of suspected terrorists cast a critical spotlight on the paradox of the de-territorialised virtual border that excludes local interests set against the thickening heavily securitised border (Muller 2009; Eilenberg 2014). The borderland zones that service the expanding energy demands of urbanising populations across mainland Southeast Asia have become such spaces of exception. These spaces of exception exist for the exploitation of human and environmental resources by small-scale subcontractors who manage unregulated multinational megaprojects such as hydropower dams, reservoirs and gas pipelines. As borderland subcontractors are not regarded as agents of corporate social responsibility for environmental protection, their flexible labour standards do not attract the sorts of political protests for environmental and social justice that could be reasonably expected in towns and cities (Pangsapa and Smith 2008). Moreover, the bureaucratic mechanisms that govern decision-making between the countries and communities that traverse these fluid borderland zones are as deliberately open-ended as the borders are selectively porous. The higher the spatial scale of decision-making, the more opaque planning guidelines are likely to be, concealing cross-scalar issues of sustainable development and environmental justice to smooth the way for modernisation projects. In the Mekong Delta, for example, China and Myanmar have elected to be excluded from, to avoid being bound by, the regional institutional framework for water resource development, sharing and use. The boundaries of what constitutes the “Mekong Basin” are also continually being redefined to serve the interests of mega-development projects, including the selective exclusion of tributaries from the basin’s governing bureaucracy and operational procedures to enable tributary-based projects to proceed, even when such projects have cross-border implications (Lebel et al. 2005).

Finally, the border must be understood as a vehicle for the exchange, transformation or blockage of knowledge, ideas and technologies in the governance of cross-border disasters. In other words, if all disasters occur in political spaces then the political contingencies of the international border are a potent determinant of the receptiveness of impacted countries and communities to outside offers of assistance in times of crisis. Border politics also influence the extent to which receiving countries feel the need to adapt or mutate foreign recovery resources for domestic consumption. There are often good reasons for this cautionary approach to idea of the national border as a conduit for potential political harm in addition to welcome humanitarian interventions. As Karl Kim and Konia Freitas warn in Chap. 9 of this book, introducing disaster governance programs into the isolated island communities of the Asia-Pacific that lack knowledge of local conditions or ignore cultural traditions can fuel social conflict or further destabilise impacted communities, with clear implications for their capacities to build resilience to future disasters.

As the towns and cities of Asia and the Pacific become ever more interconnected through their imprints onto people and places extending beyond urban nodes, cross-border urban networks for sustainable environmental governance have never been more possible, or important. The rapidly urbanising Asia-Pacific warrants special attention as a site where dense concentrations of people and resources can be mobilised in the service of grappling with the growing complexities of cross-border disastrous events that have multiple causalities and far reaching impacts. To this end, we consider in the following pages how the border is being navigated in the governance of cross-border disasters across the Asia-Pacific in the theoretical and empirical contributions that comprise this volume.

## 1.4 About This Volume

Taken together, the chapters in this book address key issues in cross-border disaster governance in the urbanising societies of Asia and the Pacific. They consider the constantly shifting permeability of the national border within the complicating contexts of modernising development projects and postcolonial nation-building agendas, and how assumptions about territorial sovereignty challenge cross-border cooperation in times of crisis, rupture and displacement. Above all, they are concerned with the many ways in which the transition from rural to urban settlements across the Asia-Pacific is fundamentally realigning the possibilities for cross-border disaster governance, while at the same time raising new problems for socioeconomic resilience and stability at multiple scales. This includes evaluating how the expanding ecological footprint of cities into increasingly remote and rural localities is creating new chains of ecological harm with cascading and unpredictable impacts that cannot be contained within neatly drawn jurisdictional boundaries. It also includes exploring the possibilities for innovative cross-border disaster governance in urbanising societies that will increase our understanding of how to mobilise technologies, ideas and knowledge in more effective and inclusive ways.

The role of the border in disaster governance in historical and contemporary perspective is the focus of the first section of this book. Considerable research has been devoted to the changing nature of the border through the experiences of disaster and displacement. In Chap. 2, Anthony Reid speaks to this scholarship through his provocation to realign the traditional function of militaries in defending national security interests to respond to the twenty-first century priority of protecting vulnerable urbanising populations across state borders in the face of ever more frequent and large-scale environmental disasters. According to Reid, this shift was precipitated by the historical transition away from the polarising sovereignty wars that disrupted much of the twentieth century through the consecutive periods of colonisation and decolonisation (and, in some cases such as East Timor, re-colonisation by Indonesia following the end of Portuguese colonial rule). In the twenty-first century, by contrast, Reid contends that relative peacetime conditions in the Asia-Pacific, coupled with an unprecedented global awareness of, and experience of responding

to, some of the biggest environmental disasters in memory have ushered in a planetary imperative to forge coordinated regional networks in dealing with the growing threat of environmental disasters in increasingly risk-prone urbanising societies.

Zooming in on a slice of the colonial history of Southeast Asia, Fiona Williamson interrogates in Chap. 3 the role of the border in the circulation of scientific knowledge about tropical climates, deforestation, climate change and urban resilience across the Straits Settlement colonies of the British Empire. Through her examination of how British colonial administrative thinking about governing recurrent flooding episodes in the cities of Kuala Lumpur and Singapore shifted during the nineteenth century, Williamson highlights discrepancies between official records detailing British technical efficiency and the real-world limitations of cross-border governance that fuelled social discontent and spatial inequalities. In doing so, she makes a powerful case for why wider historical perspectives of disasters that take into account colonial urban planning regimes and the flows of knowledge across complex historical geographies are vital to our contextual understanding of contemporary events, with a view to improving the efficacy of cross-border disaster governance systems in the future.

In different but overlapping ways, Chaps. 4 and 5 present theoretical and policy insights into contemporary thinking about cross-border disaster governance in our global urban age. In Chap. 4, Matthias Garschagen identifies knowledge gaps and research needs in extant scholarship on cross-border disaster governance in East, South and Southeast Asia to highlight the limitations of established regional platforms such as ASEAN (Association of Southeast Asian Nations) in developing and implementing transnational policy frameworks. Emphasising the role of urbanisation in shaping cross-border disaster risks and impacts, Garschagen shows how uneven analysis of this emerging policy terrain can offer a heuristic device for formulating more comprehensive recommendations in cross-border disaster governance regimes. For John Hannigan (Chap. 5), the modern nation-state border is itself the principal object of interrogation and a potential space of hope in the search for greater efficacy and inclusiveness in cross-border disaster governance. Describing different ways of conceptualising the “border” and “bordering”, Hannigan explains how a fluid, transitional approach to the border allows us to open up spaces of hope through which to establish collective socioecological identities that can transcend conventional territorial constraints. This involves, for example, examining how crossing borders can create policy options for human agency via the mobilisation of humanitarian corridors to deal with disaster displacement, and by rethinking the spatial potential of borderlands as zones of shared ecological units tied to sustainable community livelihoods.

Part Two of this book considers the challenges and opportunities of governing cross-border disasters in Asia’s transboundary riparian regions. In these megaregions, or regions of regions, that include multiple countries, the governance of increasingly scarce water resources is becoming a source of political conflict and regional crisis. This crisis is being exacerbated by the proliferation of hydropower dams and large-scale irrigation projects that are disrupting dependent ecologies and displacing large populations (for example, through forced evictions and loss of land

associated with decreased sedimentation or coastal erosion), while rendering other settlements more vulnerable to floods, droughts, landslides, environmental pollutants and diseases. The Mekong Delta Region is emblematic of this growing crisis in cross-border governance within a matrix of interlinked urban systems that are dependent upon shared ecosystems undergoing intensive anthropogenic transformations. Chapters 6 and 7 examine different dimensions of the challenges and opportunities involved in cross-border governance in the face of increasing environmental disruptions and diminishing resources in the Mekong Delta. In Chap. 6, Richard Friend and Pakamas Thinphanga set out the implications for climate change adaptation in the Mekong by showing how accelerated urbanisation and capital investment are creating new patterns of risk and vulnerability that extend well beyond localities and events to connect with regional and global processes. By analysing the complexities of multi-scalar, interlinked and interlocked urban systems, Friend and Thinphanga explain how any meaningful approach to governing disasters and climate change adaptation in the Mekong Delta must involve cross-border policy interventions at all scales. Moreover, they argue that such interventions need to consider the cascading impacts of shocks and crises across countries and the uneven risks and socioeconomic vulnerabilities they produce in the interests of building more resilient urban futures that can withstand the effects of global climate change.

Like Friend and Thinphanga, Andrea Haefner (Chap. 7) emphasises the importance of adopting a regional perspective in dealing with the interrelated ways in which rural to urban migration and multinational investment in environmentally degrading megaprojects are contributing to cross-border compound disasters in the Mekong Delta. Focusing on the case of the Xayabouri hydropower dam construction project in the lower Mekong basin of northern Laos, Haefner examines how the dam's construction is raising regional tensions by threatening food and water security and through the displacement of millions of people and their livelihoods. More broadly, Haefner highlights a critical opportunity for inclusive transboundary governance around the vexed issue of hydropower energy, not only by sharing responsibility for the downstream vulnerabilities that hydropower dams produce and the uneven distribution of their environmental impacts, but also through the introduction of cross-border incentives to promote alternative patterns of sustainable energy consumption.

The Pearl River Delta, as described by Alain Guilloux in Chap. 8, is another example of how accelerated urbanisation coupled with heavy industrial development in a region fraught with historical sensitivities over contested national borders is complicating efforts to establish a coordinated approach to cross-border disaster governance. The low-lying Pearl River Basin, which extends from Hong Kong to Guangzhou and includes northeast Vietnam, is the second most densely populated region on earth and one of China's primary engines of economic growth. The disaster-prone region is also critically unprepared to deal with persistent recurrent flooding, typhoons, storm surges, rising sea levels and increasingly severe weather events linked to climate change. Guilloux points out how mounting public pressure experienced by delta authorities, coupled with residual tensions over border issues

with Hong Kong and the absence of shared legislative arrangements, are creating a crisis in coordinating disaster programs across multiple bureaucracies. To address these problems, Guilloux makes a case for facilitating a greater role for civil society and the private sector in building the collaborative cross-border capacities in this extremely vulnerable urban megaregion.

Part Three of this book examines how collaborative networks across national borders can either assist or impede the transfer of knowledge, ideas and technologies aimed at building more resilient urbanising societies across the Asia-Pacific. In this, the border not only demarcates the scope of environmental risk, harm and responsibility, but it also acts as a conduit for the transfer or blockage of disaster knowledge and resources. In Chap. 9, Karl Kim and Konia Freitas examine the role of the border as a vehicle for negotiating outside offers of disaster assistance in small island communities that have indigenous traditions of intergenerational knowledge, cultural systems of community resource management and a lived awareness of the physicality of the border born from their experience of relative isolation. Through examples from Hawaii, Samoa, Tonga and Indonesia (Simeulue Island), Kim and Freitas highlight the ways in which globalisation, climate change and the loss of traditional knowledge through localised urbanisation processes are reshaping the geographies of risk and vulnerability in small island communities. They consider how the border serves as a mechanism for perpetuating these processes as well as for navigating offers of external help in times of crisis. Kim and Freitas offer insights into the ways in which military assistance and international humanitarian aid could become more attentive to the possibilities for integrating aspects of indigenous knowledge into imported resilience programs. They also raise questions about the extent to which aspects of indigenous knowledge could be transferred as policy interventions for strengthening resilience in disaster-prone communities elsewhere.

City actors and institutions are playing a growing leadership role in establishing collaborative cross-border networks around the governance of disaster risk, response, recovery and resilience. The urban orientation and ecological stewardship of cross-border disaster governance networks is the focus of Chap. 10 by Kristoffer Berse. Through his study of CITYNET, a regional association of city-level authorities in the Asia-Pacific region, Berse examines the obstacles and opportunities presented by city-to-city relationships in post-disaster recovery and rehabilitation programs. More broadly, Berse is concerned with the potential of decentralised urban networks to function as agents of globalised care via the horizontal mobilisation of disaster aid and services across international borders that could parallel and complement existing country-to-country disaster programs at the subnational scale.

Scaling down further to the level of civil society organisations, Yenny Rahmayati describes in Chap. 11 how the flood of international humanitarian organisations into Indonesia's westernmost city of Banda Aceh following the 2004 Indian Ocean tsunami and undersea earthquake created unprecedented opportunities for urban-based civil society actors to forge empowering cross-border networks of collaboration. These cooperative networks formed around issues such as cultural heritage conservation, ending child labour in post-disaster economies and the recruitment of women

and young people into disaster governance programs. Rahmayati shows how the urban orientation of these international partnerships and regional networks largely overlooked rural organisations while privileging Banda Aceh-based NGOs and community groups, which subsequently became more capable of meeting their organisational goals and establishing sustainable programs. To provide redress for this rural-urban imbalance and to strengthen the overall role of civil society in future disaster governance programs, Rahmayati argues for the establishment of closer collaborative relationships between community groups and government at all levels, especially in the phase of building resilience after the recovery phase has ended and when international organisations have departed.

The final part of this volume assesses the growing potential for transnational flows of environmental harm and cross-border conflict over resource scarcity. The “water wars” between India and Bangladesh are emblematic of this new front in cross-border conflict that has become associated with twenty-first century border dynamics. As Sarfaraz Alam describes in Chap. 12, India’s diversion of the dry season flow of the River Ganges away from Bangladesh has produced catastrophic long-term consequences for millions of Bangladeshis whose livelihoods have relied for generations on the river and its downstream ecologies. Squabbles between India and Bangladesh over escalating irregular migration linked to environmental destruction and dwindling shared ecological resources are becoming intractable as both countries retreat into defensive nationalist rhetoric about where the responsibilities of one state ends and the other begins. For Alam, the resolution of this hyper-politicisation of the India-Bangladesh border must begin by educating governing authorities in both countries about their interconnected resource dependencies and causalities related to the transnational flow of environmental harm. Without such a bilateral approach to disaster governance, Alam warns that it will be impossible to manage the growing stresses on the River Ganges unilaterally, and that the existing ecological hazards confronting urbanising populations on both sides of the border will continue to generate ever more frequent and destructive environmental crises.

For Matthew Shapiro, in Chap. 13, the regional politics of transboundary air pollution and the yellow sand/dust storms that emanate from mainland China and blow across East Asia are posing an equally intractable problem in identifying and prosecuting the perpetrators of environmental harm. Focusing on the role of EANET (the East Asian Acid Deposition Monitoring Network), Shapiro examines how regional networks of scientific researchers are being constrained in their efforts to collect data and disseminate information about environmental pollution, both domestically and within the context of the sensitive regional politics that produce multilateral agreements such as those that created EANET. Arguing that epistemic communities are vital to identifying and addressing regional environmental challenges, Shapiro points out that the very existence of organisations such as EANET and the willingness of Chinese urban planners to adopt best practices from abroad show considerable promise for East Asia’s ability to deal with transboundary air pollution. On the other hand, however, the geographical shift of worsening air pollution away from China’s coastal cities to rural hinterlands creates an imperative for China’s urban centres to prioritise sustainable modes of resource consumption and

to play a more progressive role in national and regional disaster governance networks to diffuse mounting regional tensions.

Going against the grain of the other contributions in this volume, Robert Wasson (Chap. 14) sees less, rather than more, regional connectedness as being potentially desirable to minimise the cross-border threats posed by geomagnetic solar storms. This is because solar storms produce geo-electric currents that can destroy cross-border power grids and disrupt water management systems, with cascading impacts on all aspects of human settlement ranging from health to food production, waste disposal, livelihoods and social stability. For this reason, Wasson argues for a more decentralised, localised and modulated approach to electricity and water production and distribution across Asia and the Pacific than is currently in effect.

What all of our authors emphasise through their contributions to this book is that the tremendous range of contextual variables within and between the urbanising societies of the Asia-Pacific necessitates a multi-sector, multi-disciplinary and multi-stakeholder approach to cross-border disaster governance. Equally, they point to the need for far greater attention to the range of causalities that incubate cross-border disasters before the actual moment of crisis. These interconnected causalities in turn contribute to the compounding impacts of catastrophic events that have far-reaching effects, often across multiple countries, and with long-term legacies that shape the capacities of future generations to build strategies of resilience to disasters. These factors, combined with the urbanising and industrialising processes that are transforming the Asia-Pacific region and creating new geographies of risk and vulnerability, call for a flexible and adaptable approach to forging collaborative networks in disaster governance regimes across countries.

Through this collection we hope to raise awareness of the need to recalibrate our spatial and scalar understandings of environmental disasters in the service of developing more effective and inclusive forms of cross-border disaster governance. By invoking the idea of the national border as an entity that is at once fixed and fluid, we aim to infuse a sense of the complex political dynamics that must be negotiated in the transfer of knowledge, technologies and disaster resources across sovereign territories in a region awash with contested colonial histories and shifting alliances around development projects and strategic national interests. Within these complicated and diverse transnational contexts, the border can either function as a vehicle for the transfer of flows of environmental harm or as a conduit for progressive approaches to disaster governance and ecological conservation. It is the goal of this book to provide a platform for researchers and policy makers to develop more innovative participatory approaches to cross-border disaster governance that can nurture resilient urbanising societies within and beyond Asia and the Pacific.

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