

Chapter 6

Urban Transformations Across Borders: The Interwoven Influence of Regionalisation, Urbanisation and Climate Change in the Mekong Region

Richard Friend and Pakamas Thinphanga

6.1 Introduction

There is growing global interest in urbanisation and urban risks, particularly around climate change and disasters, and the corresponding need to build resilience. Much of the struggle to avoid climate catastrophe will be played out in the urban arena. Urbanisation is a major contributor to greenhouse gas (GHG) emissions and global climate change, while patterns of urbanisation place a higher concentration of people and economic assets in vulnerable locations. Equally, global policy debates acknowledge the growing awareness of the leading role that cities can play, and the potential of city governments for filling the vacuum of inaction over global environmental challenges.

Much of the effort around disaster risk reduction and climate change adaptation has focused on local and community dimensions (Cutter et al. 2008). Related literature has also highlighted the ‘interlinked disasters’ (Shimizu and Clark 2015) and the ways in which interlinkages across people and places through increasingly globalised systems, structures and processes influence how disasters occur, and how their impacts cascade beyond specific locations (Adger et al. 2009). These approaches have informed our understanding of global health crises as well as economic crises, while also recognising the role of cities as nodes of transmission within these broader networks. However, there has been less consideration of the role that urbanisation plays as a transformative process in reshaping and redistributing vulnerability and risk, and of the role that regional economic integration plays in transferring vulnerability and risk across national borders.

R. Friend (✉)

Environment Department, University of York, York, North Yorkshire, UK
e-mail: richard.friend@york.ac.uk

P. Thinphanga

Thailand Environment Institute Foundation (TEI), Bangkok, Bangkok, Thailand

In this chapter we address how the phenomena of globalised and regionalised cities and urban regions create new patterns of risk and vulnerability, and how the ways in which urban regions are linked also create fault lines through which the impacts of shocks, crises and stresses cascade beyond the site of specific events. Our focus on environmental disasters is largely on climate-related shocks and crises, while also recognising that disasters are rarely attributable to one set of factors alone, whether climate, environmental or man-made. Yet climate change presents important context for discussion here given the clear connections between urbanisation and global environmental change, and the widely noted significance of urban areas as locations of climate vulnerability.

Urbanisation and global environmental change must also be approached from a political economy perspective. Recent literature has highlighted the tension between capitalism and global environmental change (Klein 2014; Pelling et al. 2012). Viewing contemporary urbanisation as both a product and necessary feature of global capitalism focuses attention on a fundamental clash of rationalities between capital and ecology, and the way in which capital investments in land that underpin urbanisation deal with the risks and vulnerabilities that such investment creates. Urbanisation in Asia illustrates a critical tension between the investment logic of filling wetlands and land transformations, with ecological imperatives to maintain natural water sources and flood protection. The vulnerabilities that emerge through capital's need for a spatial fix through investment in land (Harvey 2001) is offset by the redistribution of vulnerabilities through localised infrastructure solutions, combined with a hedging approach to risk management in which investment portfolios are spread across multiple locations and borders.

This chapter emerges from several years' involvement in city level implementation and action research projects focusing on urban climate resilience. It is part of an attempt to develop a coherent theoretical approach to our understanding of urbanization in the Mekong region as being partly driven by regional economic integration, and how such forces reshape climate and environmental vulnerabilities and risks as being both local and regional. The chapter draws on our own empirical data garnered from engagement in a number of projects; as members of research teams and as actors in facilitating multi-stakeholder dialogue, and as partners in collaborative research efforts (Friend et al. 2016). The chapter is also supplemented by literature reviews, and a reading of a recent regional disaster, the 2011 floods that affected much of Thailand and ongoing controversy around industrial estates, that itself influenced how local actors in secondary cities approached the challenges of urbanization, regionalization and climate change.

6.2 Moving from a Place-Based Approach to Climate Disasters

The starting point for assessing urban climate vulnerability within much of the emerging research on urban climate resilience has been focused on hazards of space—hazardous zones (Cutter et al. 2008) and vulnerable spaces. Projections of future climate change have been used to identify the locations that might be directly vulnerable to a range of anticipated climate variables. From this assessment, the locations of vulnerability and risk can be mapped, and the implications for people, or spheres of economic activity that are located in these vulnerable spaces, can be calculated.

Of course the calculation of climate vulnerability is more sophisticated, taking on board the combined influences of exposure, sensitivity and adaptive capacity, while compensating for a range of future development scenarios. Not all locations or people that are similarly exposed display the same degree of vulnerability, and in many cases issues of adaptive capacity are the most significant in determining overall vulnerability. Adaptive capacity itself is a function of a range of factors related to assets, capabilities, power and knowledge, often defined in shorthand in terms of poverty and wealth. This broad approach has led to a proliferation of projections with efforts to determine the likely impacts of climate change on specific locations, through mapping vulnerable space and people who are located in this space, and site-based interventions to reduce vulnerability.

Taking climate projections as the starting point for assessing urban vulnerability becomes problematic due to the very nature of urbanisation across Asia (Friend et al. 2015; Institute for Social and Environmental Transition–International et al. 2014). The city in Asia itself is a moving target. The pace of change is so intense that it is increasingly difficult to define the limits of the urban space, whether from the perspective of administrative, physical or ecological boundaries.

Patterns of urbanisation create complex linkages between and across territories, sectors and—most importantly—between and among people. Urbanisation brings people together in new patterns of settlement and employment that are often highly mobile, and in ways that transcend traditional categories of urban and rural space. With greater diversity in urban areas, patterns of shared identity and community are less clear, often multi-scaled and overlapping, and generally not directly associated with territory or with location of residence, but more closely associated with ethnicity, language, religion, class and employment.

The understanding of disasters has increasingly adopted concepts of ‘interlinked disasters’ (Shimizu and Clark 2015) and cascading impacts of shocks and crises across territories. Disasters are increasingly marked by the degree of intensity and uncertainty, but also the complexity with which disasters have repercussions and ramifications both spatially and temporally. The networks that bind locations together can thus also be fault lines by which disasters are transmitted across disparate territories. The concept of teleconnections (Adger et al. 2009) draws attention to nested relationships, and the synergistic and interdependent nature of

social-ecological relationships; globalisation is making such interdependencies critical determinants of local vulnerability (p. 151). As urbanisation becomes part of regional and global phenomena, with cities increasingly linked by chains of markets, production, transport and communication—a kind of ‘pan-urbanism’ (Moris 2014)—it is the nature of these linkages that increasingly determines what occurs in a specific urban locality.

Moving from looking at disasters as being bound by space, and from site-specific to systemic and networked dimensions of disasters, illuminates the increasingly interdependent global systems on which urbanisation depends—water, food, energy, transport, waste and information. However, even this perspective tends to take the urban itself to be spatially bound, and representative of the local (Shimizu and Clark 2015). Notions of the ‘local’ become problematic in parts of the world where urbanisation is accelerating at a pace and in ways that are difficult to predict, and that are being brought together in regional and global configurations (Friend et al. 2015). This has been referred to as the ‘double exposure’ whereby ‘regions, sectors, ecosystems and social groups will be confronted both by the impacts of climate change and by the consequences of globalisation’ (O’Brien and Leichenko 2000, p. 222).

With such a rapid transformation unfolding, part of the challenge is in understanding the drivers of urbanisation and the ways in which risk is calculated, created and reinvented as a function of the transformations of land use and values, infrastructure and production systems, and exchange mechanisms. The scale of investment in urbanisation, and more specifically in real estate markets as well as in industrial development, reminds us of the dependence on capital flows, and the dependence of capital on creating new opportunities for accumulation (Isono 2010).

Patterns of urbanisation in the Mekong reveal some limitations of a territorially focused approach to vulnerability. The Mekong is now emerging as a region, or rather a region of regions that is increasingly linked to the global scale. Patterns of regionalisation themselves influence the ways in which urbanisation unfolds, how locations are linked across national boundaries, and how vulnerability and risk is calculated and manufactured.

6.3 Interlinked and Interlocked Urban Systems

A critical but often overlooked dimension of regionalisation is the way urban systems expand across territories, allowing for agglomeration and accumulation in specific sites, while also creating new sets of linkages (Harvey 2001). The focus on such systems, with its theoretical grounding in complex social-ecological systems (Leach et al. 2007), takes the concept of double exposure (O’Brien and Leichenko 2000) further in order to consider the significance of urban systems and their inherent fragility, and the ways in which they are interlinked and interconnected.

A critical aspect of contemporary urbanisation is the dependence on systems for food, water, energy, communications and transport that extend way beyond the

physical, geographic space of the city (Elmqvist 2014; Tyler and Moench 2012). The dependence on complex systems of technology and infrastructure allow for the scale and reach of urbanisation in its contemporary form (Graham and Marvin 2001). The ability of financial markets and production systems to operate across diverse territories and move rapidly from one location to another allows for the scale of investment, agglomeration of assets and capital accumulation.

Such urban systems are a combination of natural ecologies, physical infrastructure and technology, and agents (people, individuals, households, communities and organisations) and institutions (rules, norms and practice). For example, water is a natural resource and part of a complex ecological cycle. Its extraction, distribution and use is shaped by man-made physical infrastructure and technology, that is itself managed and accessed by interactions between individuals, organisations, companies and government. The access to and distribution of water is also shaped by rules, norms, laws, policies and crucially practice. Water can thus be seen as a complex system comprising infrastructure and technology, agents and institutions bringing together biophysical and social dimensions, yet still dependent on and influencing ecological processes (Tyler and Moench 2012).

These specific characteristics of urbanisation—from both the complex social-ecological systems and the political economy perspective—have not been adequately addressed in the literature on urban disasters (Friend et al. 2015). Similarly, the influence of urban systems on shaping vulnerability and poverty has also received limited attention. Accessing urban systems is essential for ensuring access to critical services (health, nutrition, employment and shelter) and the benefits that they deliver, and thus for ensuring wellbeing and reducing poverty and vulnerability. In the majority of rapidly growing cities, a significant proportion of people lack adequate access to reliable, high-quality systems and services (Friend and Moench 2013).

Moreover, there is something in the nature of infrastructure and technology systems that opens up the potential for failure (Ahern 2011; Tyler and Moench 2012). As recent economic and weather-related shocks have demonstrated in dramatic fashion, even the best of urban infrastructure and technology systems have some element of fragility; a disturbance in any one part in such a system can have cascading impacts on other parts, both through people and places. In many ways, the greater the dependence on these systems, the more dramatic and far-reaching are the consequences of failures.

The ways in which urban systems operate further blurs the boundaries between the city and the non-city and between the social and physical dimensions of systems. Cutting across different geographies, systems linkages cross regional and global scales as resources, capital, labour and information move on transport and communication infrastructure between and across urban and rural areas (Friend and Moench 2013). The goods and services on which urban populations depend are part of increasingly global production and distribution networks, themselves sustained by global transport and communications technology and infrastructure, and of course globalised capital (Graham and Marvin 2001; Parnell and Robinson 2012). Cities are not only linked to their immediate rural hinterland; through these

increasingly multi-scale and complex interlinkages, they are increasingly networked across regions, and across the globe (Sassen 2005).

In such a globalised economy, there is an inherent competition between cities: between those that are well connected and thus become centres of investment and growth, and those that are more marginalised, with cities competing for various forms of investment and economic growth (McCann 2004). These networks and patterns of investment, wealth and power between cities across the globe create new centres and peripheries of development and dependency, and axes of competition, reminding us of earlier work on world systems (Wallerstein 2004). Yet against earlier expectations of dependency theory, cities in the former periphery of the Global South are emerging as global centres linked to other such urban centres, while also exhibiting harsh extremes between wealth and deprivation (Roy 2009). Mumbai stands out as an example of these extremes, being home to both some of the most expensive real estate on the planet, and also the most extreme absolute poverty. Similarly, some urban centres prosper while being surrounded by a hinterland of urban peripheries across broader geographies: the non-resilient and failed cities. The prosperity and security of the centre requires the impoverishment and vulnerability of the periphery.

As a transformative process, urbanisation creates not only a new vulnerability context for people in both urban and rural areas, but also a specific urban ecology that derives its character from changing land use and urban design and the influences these have on natural features like hydrology, temperature, and air quality (Parnell et al. 2007; Pelling and Manuel-Navarrete 2011). Urbanisation is itself associated with a range of environmental problems. In monsoonal Asia the phenomenon of urban heat islands is argued to increase urban temperatures by several degrees in comparison with less built-up environments in the perimeter (Srivani et al. 2012). The combination of higher temperatures and the high humidity increase the heat index, which is directly related to how the human body is able to cool, especially during the night. Major heat waves in cities in Pakistan and India have demonstrated the potential impacts of such a high heat index in cities in which many working people are exposed to high temperatures during the day due to the nature of their work, and have only limited cooling in their homes (Ammann et al. 2014). Problems of heat in Asian cities are further compounded by poor air quality and high levels of pollution.

The interlinkages between different locations and economies are also evident in changing patterns of livelihoods, employment and migration. Rural livelihoods are increasingly dependent on off-farm employment, or what Winkels (2011) has referred to as 'stretched livelihoods'. Migration between rural and urban economies is increasingly significant, with members of farming households often employed at certain times of the year (or more permanently) in urban economic sectors, and remittances flowing between the two locations (McKay 2005).

Much of the urban economy is informal and inherently vulnerable, with people engaged in labour relations that are poorly regulated and unpredictable, in which they have limited rights, often suffering abuse and exploitation while earning low wages. The informality of cities also encompasses the ways in which people access

services and urban systems, going through institutional mechanisms that are shaped by corruption, criminality and patronage, yet often paying prices that are higher than the formal market, while enjoying a quality of service that is far below market standards. Urban people's wellbeing, whether as individuals, households, or communities and neighbourhoods, is related not just to their ability to access systems and services, but also to complex institutional arrangements (Friend and Moench 2015).

Across this story is a degree of dependence on systems and structures over which individuals, households and even neighbourhoods have at best only limited influence, and in most cases, extremely limited control. Increasingly it is through these systems, and their inherent fragilities, that impacts of disasters becomes manifest beyond specific locations. As we discuss below, such systems are themselves shaped by regional and global political and economic forces.

6.4 Regionalisation: Reshaping Borders, Linkages and Dependencies

Regionalisation is a reconfiguring of nation states and national borders, not necessarily in the ways in which these are mapped, but in some of the core functions that govern how resources, goods and services are transferred between locations. Indeed, the very purpose of regional economic integration is to reconfigure the economic function of borders. Rather than restricting movements of people, goods, and capital national borders are being reconfigured to facilitate movement across locations, creating trans-boundary markets and efficiencies of resource access and distribution.

There is thus an unavoidably regional dimension to the reconfiguring of vulnerabilities and risks. Economic integration creates new linkages across different regional assemblages, and new patterns of urbanisation both in terms of human settlement and in terms of industrial production. These patterns of regional integration shape the territorial reach of urban risks and vulnerabilities, creating new transmission lines through which impacts of shocks and crises cascade across different locations. Yet at the same time, underpinning investment and physical infrastructure is a calculation of vulnerability and risk that increasingly is regional and global in nature. The implications of these shifts for environmental and climate-related shocks requires closer conceptual and empirical scrutiny.

Central to urbanisation is the transformation of landscapes, in terms of their values and uses, and the flows of resources between different locations. Urbanisation in the Mekong (and similar regions) is very much driven by the logic of capital—the expansion of markets, and the integration of different locations and people into an increasingly regionalised and globalised economy. Urbanisation requires the agglomeration of economic assets, and the transformation of land—both in how it is utilised and in its production and exchange value. There is an environmental dimension to how risk and returns are calculated. Across the region, urbanising

areas target low-value land where the immediate capital returns on investment are the highest. Yet from an environmental perspective, low-value land in this region tends to be land that is hazardous, being prone to seasonal flooding and very often in the agricultural floodplains or along the coastal strips.

Alongside patterns of investment come calculations of risk. One of the puzzles in this story is the way in which space that is identified as hazardous is targeted for investment. This is partly due to an incomplete appreciation of risks, particularly those associated with uncertain future climate risks. But it is also due to inherent characteristics of capital investment targeting low value land. This is calculated on a principle of hedging, and in this way distributing risk across locations, building redundancy into the portfolio of investments. The risk of a disaster in one location is balanced by the assessment of low level of risk for more than one location facing a disaster at the same point in time.

Such a discussion inevitably takes us into a consideration of issues of governance. In many ways, the way that urbanisation has unfolded in Asia is a consequence of failures of governance. The basic tools of urban policy and planning in the region are notoriously weak. Land use planning is little more than painting-by-numbers: a retrospective mapping of land use changes that have occurred on the ground, rather than a tool for strategic long-term planning (Ribiero 2005). Similarly, environmental governance through Environmental Impact Assessment (EIA) in the region occurs at the latter stages of project development, and rarely has the independence or legal authority to influence project development in any significant way. These failings are largely a product of the collusion of capital and state, with the state playing both the regulatory role, and the role of investor. With such a tension between these competing roles, considerations for environmental and social concerns are easily over-ridden. Additionally, in urban areas the public goods of systems and services, whether they are water, energy, waste or transport are largely privatised. There is very little public space in urban Asia. But perhaps even more significantly the public policy process is itself privatised, with private companies take on planning roles that would normally be the realm of the public sphere. Rather than the privatisation of projects, we are witnessing the privatisation of the complete urban project (Shatkin 2007).

6.5 Regionalisation: The Specific Case of the Greater Mekong Sub-region (GMS)

Urbanisation is of course a global phenomenon, one that is accelerating and intensifying in many parts of the world but especially in Africa and Asia. The specific drivers and patterns of urbanisation are shaped by local context and circumstances, by histories of colonialism and integration into globalised markets and production patterns. While there are universal characteristics, there is also a growing need for theoretical explanations that are grounded in the particular experience of the Global

South, differentiated further across specific countries (Parnell and Robinson 2012; Patel 2014; Roy 2009).

Mainland Southeast Asia illustrates the changing urban landscape and the relationship with environmental disasters. While cities have a long history in Southeast Asia, the current drive of urbanisation has its roots in patterns of globalisation and regionalisation that are political and economic in nature. The pace of urbanisation in the region is among the highest in the world. In little more than a generation this part of the world has witnessed a dramatic transformation from a largely subsistence agricultural economy, distanced from the globalised economy, to one of the main drivers of global economic activity.

The region of the Mekong is itself a recent construct, and one that has not yet come to fruition. It is born of a history of shifting lines of national authority and allegiance that have emerged through conflicts between colonial powers, ruling elites and changing notions of identity, and that have created networks of power and dependency with shifting centres and peripheries. National boundaries were rarely mapped in the pre-colonial period, with state authority created and reinforced through lines of tribute (Winichakul 1994). Similarly, ethnicity was mixed, and many of the larger ethnic groups of the region—the Karen, Cham, Mon and Hmong—were left out in the post-colonial creation of nation states.

The boundaries of the ‘Mekong region’ can be defined in different ways: according to the ecological boundaries of the Mekong river basin itself, or more broadly to encompass the countries of Cambodia, Lao PDR, Myanmar, Thailand and Vietnam as well as parts of China. The central place of the Mekong in these notions of a region is as much a legacy of the imagining of the French colonial powers, as any sense of shared identity or common interest among its people or governments.

In using the term Mekong to describe a rather fluid region, we also recognise that it is just being born as a region, and indeed is one of many regions that create an increasingly fluid landscape beyond borders of nation states. A number of different regions are currently in operation—the Greater Mekong Sub-region (GMS), initially funded by the Asian Development Bank (ADB) through support to transport and energy infrastructure systems, brings together the countries of Cambodia, Myanmar, Thailand, Vietnam and southern provinces of China. Despite its name, it brings together a number of major river basins beyond the Mekong with the majority of people within the region having little direct connection with the river itself.

The countries of the Mekong are also members of alternative constellations that are designed to counterbalance the power of China, while creating economic opportunities. The Ayerwady-Chao Phraya-Mekong Economic Cooperation Strategy (or ACMECS), established in 2003 on the edge of an ASEAN summit, brings together Myanmar, Cambodia, Laos, Thailand and Vietnam in a similar commitment to foster economic cooperation between the countries. Each of these countries is also a member of ASEAN and APEC, broader alliances of security and economic interest.

A less ambitious scope of regional cooperation has been established for the lower Mekong River basin with the creation of the Mekong River Commission (MRC), focusing on cooperation in sharing of the water resources of the basin, and enshrined

in the 1995 Mekong Agreement. Much of the efforts under the MRC have been focused on cooperation in the development of the hydropower sector, most recently along the mainstream of the river.

Much of the motivation in regionalising these countries is in the creation of market opportunities both as labour and as consumers, applying former Thai Prime Minister Chatchai Choonhavan's motto of "turning battlefields into market places". Here of course, urbanisation plays an important role in creating a market for consumption and a whole set of urban values in which consumption patterns, habitat and lifestyle are intertwined (Friend and Thinphanga 2018).

6.6 The Expansion of Infrastructure and Technology

Infrastructure and technology allow for current patterns of urbanisation and regionalization—for what Sassen (2005, p. 2) refers to as the 'the geographic dispersal of economic activities that marks globalisation, along with the simultaneous integration of such geographically dispersed activities'. This itself requires, and opens, opportunities for investment in the physical infrastructure that brings locations and economies together in ways that allow for greater efficiencies. But equally it is through this networked infrastructure—that allows for movement of information, capital, goods and services—that the impacts of shocks in one location reverberate across the globe.

The extent of this transformation was difficult to predict only 20 years ago (or less), but the way it is unfolding clearly relates back to earlier theoretical arguments around urbanisation in the region. The problem of defining the boundaries of the urban has been a persistent area of interest in urban studies of Southeast Asia. This has led to theoretical approaches that have talked of mega-urban regions (McGee 1991) that bring together urban and rural centres within a specific national region. Similarly, debates around the 'desakota' continuum have highlighted the interlinkages and dependencies between rural and urban areas. A slightly more refined version of this notion of rural-urban linkages, and the blurring of boundaries, can be found in the use of the term 'rurban'. Urbanisation is a transformation of rural space, economy and society as much as it is a transformation of the city itself. Most significantly, it is the linkages between the two that stand out. As Douglass (1995, p. 64) predicted over 20 years ago,

spatial development is more characterized by expanding networks of rural-urban linkages that defy simple models of spatial structure. They also present new issues and problems for urban and regional planning and management.

The transformation is not necessarily a one-way, evolutionary transition from rural to urban, or from agricultural to industrial, as we can see from the diverse experience of countries such as Laos and Myanmar, as well as the experience of India and South Asia. Across these different theoretical debates is the recognition of the murkiness of categories of rural and urban. However, they have generally been

applied to notions of regions within national boundaries. Similarly, vulnerabilities are not solely determined by location, but more by the nature of the linkages between locations, their inherent fragilities and failures, and the ways in which risk and impacts of specific shocks are transferred between the two.

6.7 Emerging Patterns of Cross-Border Vulnerability and Risk

As in other parts of the world, much of the most rapid urbanisation in the GMS is driven by trans-boundary trade and production patterns and economic ambitions, with ‘trans-border urban regions’ and ‘urban corridors’ that follow the core transport (and energy) infrastructure that has been put in place across the GMS.

The initial investment that underpins the GMS has been around the construction and expansion of core regional infrastructure: transport and energy. A grid of roads—referred to as corridors—cut across the region from North-South and East-West linking key trade and communications centres, and supporting the development of industrial complexes. Alongside these transport investments, the energy sector has also seen investment with the vision of an integrated regional energy grid. Much of this energy is to be generated by hydropower, with the region seeing a massive expansion of dams across the tributaries, and within recent years, along the mainstream of the Mekong River. These investments have also been hugely controversial, with concerns for environmental and social impacts at site level, but also across the region (Molle et al. 2009; Haefner in this volume).

While the initial investment for the Greater Mekong Subregion (GMS) came from the Asian Development Bank (ADB) this is now dwarfed by the private sector investments, with much of the capital coming from the region. Rather than the global capital from the North, the national capital from within the Mekong as well as from East Asia (China, Korea and Japan) is increasingly influential, less guided by the social and environmental safeguards of the ADB and other IFIs. This can also be seen as an expansion of existing industrial production to multiple locations in the region taking advantage of preferential labour costs, and of opening new markets. The level of investment in the region is also a product of the shocks in global financial markets. With loose capital struggling to find a base that provides reliable revenue streams, the spatial fix of multi-scale investment in real estate, both urban and industrial, is all the more attractive.

Part of the focus of the GMS is on overcoming the constraints of the previously established borders. These constraints are partly institutional but location of Special Economic Zones and related growth triangles in the GMS is also dependent on broader trans-border transport and production systems; their viability is not just tied to their location relative to borders and their ability to overcome the borders at which they are located, but also to their ability to benefit from broader multinational linkages.

One of the most striking features of this scale of investment is the emergence of urban regions and urban corridors, beyond the boundaries of specific cities or specific industrial parks, straddling national borders in growth triangles, and across coasts through transport corridors. As Scott et al. (2002, p. 12) observe of a global phenomenon of global cities and city regions:

Whereas most metropolitan regions in the past were focused mainly on one or perhaps two clearly-defined central cities, the city-regions of today are becoming increasingly polycentric or multi-clustered agglomerations.

Moreover, these city regions exist beyond contiguous locations.

City regions, and indeed growth triangles are no longer necessarily territorially contiguous. For example, the case of Map Tha Phut and the expansion of industrial zones in Dawei (Myanmar) and Quy Nhon (Vietnam) illustrates attempts at the regional reconfiguring of industrial production and trade, and the redistribution of patterns of risk and vulnerability.

One of the key areas of linkage and commonality is in the form of the investment capital that supports these developments. Two of the major Thai companies are involved in both Quy Nhon and Dawei, demonstrating the regional expansion of Thai capital. PTT Public Company Limited was the lead investor in the Non Hoi Oil Refinery Complex, with an initial total budget of US\$28 billion dollars while Ital-Thai is one of the leading investors in Dawei (Bangkok Post 2015).

The motivation for these projects is partly around expanding markets and increasing efficiencies. Yet there is a more sinister motivation behind these investments. In many ways they represent a response to existing environmental and social impacts that constrain the ability of Thai capital to invest within Thailand's own national boundaries, and the expansion of industries that have been mired in controversy in Thailand. The combination of a history of conflict along with strengthened environmental legislation has been identified as a constraining influence on the petrochemical industry in Thailand. In 2010 the then-Prime Minister was quoted as arguing the case for exporting such industries.

'Some industries are not suitable to be located in Thailand,' Abhisit Vejjajiva, the Thai prime minister, said in explaining the project to viewers of his weekly television address recently. 'This is why they decided to set up there,' he said, referring to Dawei (International Herald Tribune 2010)

This was a position taken up by successive governments and apparently endorsed in the National Economic and Social Development Board's (NESDB) 11th five-year plan that was passed in 2011 (National Economic and Social Development Board 2011). In some ways this can be seen as a progressive decision in recognising the impact of industrial development, and the failings of environmental governance and land use planning. Yet even this acknowledgement of past failings has recently been overruled, with the military junta government passing a law that allows it to use special powers to push through the development of Special Economic Zones (SEZs), and promotion of coal-fire power stations. Recently it has been announced that Map Tha Phut will be expanded, and a high-speed rail link established to the north-east and onwards to China.

When considered as stand-alone investment projects, there are considerable risks directly related to their location. For example, from a climate perspective the multi-billion dollar oil refinery project at Quy Nhon is located on a hazardous part of the Vietnamese coast, vulnerable to storms and floods (DiGregorio 2015). But this is only one project in a global investment portfolio. While the risk of a climate event in Quy Nhon might be considered to be high, the investor's portfolio is spread across different locations. The risk of a similar event striking more than one of these investments at the same time would be considered to be extremely low. This diversification of risk—or rather, a hedging approach to climate risk—can be considered as building the resilience of the global investment, but of course does not necessarily address the implications of a specific disaster. Ultimately the project was cancelled due to volatility of global crude oil markets, but with no apparent concern for environmental risk.¹

With the Thai (and global) economy facing a dramatic downturn, the expansion of investment in industrial zones, particularly SEZ's, and major public infrastructure plays a central role in national economic strategy. It is a strategy that also aims to increase domestic demand, and as such is centred on development of the urban economy, and the consumer demand that is associated with urban life (Siam Commercial Bank 2011). At the same time, the imperative to push ahead with such investments has put additional pressure on environmental governance. The military junta has announced that it will use its own extraordinary powers under Section 44 to accelerate the EIA process, arguing that 'there are too many delays caused by land use issues, environmental impact assessments (EIA) and protests' (Wangkiat 2016).

6.8 The Thailand Floods of 2011 and Emerging Drought

The ways in which the causes and impacts of disasters spread beyond specific locations became apparent in the floods that Thailand experienced in 2011 and the drought crisis that is now unfolding in 2016. During the floods of 2011, the urgency of protecting the industrial base of the country and the urban centre of Bangkok lead to frantic efforts to divert floodwaters away from the city centre to rural areas (Marks 2015). Farmlands were flooded in order to protect urban and industrial centres. Of course, managing a flood of such a scale proved challenging and many urban and industrial centres were also flooded. These dramatic events are widely referred to as the Bangkok Floods—privileging the story of the capital city over the rest of country and neighbouring provinces, thus framing the event in the imagination as being place-specific. Yet the causes and the impacts were not confined to Bangkok, and indeed, the enormous effort dedicated to protecting the economic, administrative

¹At the time of writing this project had been approved by the Vietnamese government. However, this decision was reversed in 2016 with the collapse in global crude oil prices (Vietnam Economic Times 2016).

and political heart of Bangkok contributed to the way in which impacts were created. The flood itself crossed administrative boundaries of provinces, as the waters flowed downstream from the Upper North. Significantly, the flood in the lower part of the basin was due to this upstream runoff rather than to localised rainfall.

The vulnerability to flooding of Bangkok and much of the Chao Praya basin that was so crudely exposed in 2011 has deep historical roots that illustrate the ways in which Thailand's incorporation into a globalising industrial economy also influenced patterns of vulnerability. Part of the history of changing flood vulnerability across the basin lies in the transformation of land use in the lower basin, and extensive deforestation of the upper watershed of the Chao Phraya (Roachanakanan 2012; Srisawalak-Nabangchang and Wonghanchao 2000). The history of the expansion of the country's industrial base also provides some context to the way in which the crisis of 2011 unfolded. For the lower part of the Chao Phraya basin around the Central Plains, this history also exposes in dramatic fashion the clash of rationalities between the logic of capital investment in land speculation and transformation on one hand, and the ecological dimensions of risk and vulnerability on the other. Much of the Central Plains of Thailand that became the industrial and urban base of the country had previously been designated agricultural land, in land use plans that also recognised the flood protection functions that the plains provided to the city of Bangkok (Bello et al. 1998; Roachanakanan 2012). However, these plans were overturned as foreign investment sought to locate the new industrial base of the country in affordable locations, close to major transport infrastructure at the Laem Chabang deep-sea port, and Don Muang International Airport.

With investment from overseas, largely led by Japan, the deep-sea port of Laem Chabang and the petrochemical plant of Map Tha Phut were opened along the Eastern Seaboard. With a need for locating additional factories and warehouse facilities within convenient communications reach of these industrial centres and transport centres, the lower parts of the Chao Praya basin were targeted for additional industrial estates (Roachanakanan 2012; Shatkin 2004). Much of the investment of the 1970s and 1980s that drove this land conversion was in response to the oil crises of the time, and the shift of capital investment into land speculation and away from manufacturing (Bello et al. 1998). Similar patterns of speculative capital investment in real estate have emerged as a result of the 2008 financial crisis (Harvey 2012).

This pattern of investment went directly against earlier land use plans that had designated these areas as green space, for agricultural uses and flood protection. Indeed, this earlier land use planning was itself informed by the natural ecology and hydrology of the basin; historically these areas had always been prone to a natural, annual cycle of flooding. With this level of investment, the lower Chao Phraya basin witnessed a dramatic refashioning, with further investment in residential housing estates and road infrastructure (Bello et al. 1998).

The most extreme manifestation of this pattern of investment targeting low-value, flood-prone agricultural land is illustrated by the case of Suvarnabhumi International Airport, the most important air link between Thailand and the global economy. Prior to the construction of the airport the area was better known as King Cobra Swamp—a low-lying rice-producing area that was widely recognised as

providing drainage and flood protection to the ever-expanding eastern Bangkok. Despite warnings from environmentalists of the risk of locating the airport in the swamp, the investment went ahead (Hutanuwatr et al. 2015). Suvannabhumi provides a neat, but not unique example, of the competing rationalities of capital investment versus risk protection, with the consequences becoming apparent during the 2011 floods.

This refashioning of the lower basin has created additional vulnerability to flooding, altering natural hydrology but requiring enormous, often flawed, state efforts to prevent flooding in areas where the waters would naturally flow, in order to divert the flood waters against the natural flow (Marks 2015). There was a clear international dimension to this effort. Foreign investors demanded that their assets be protected, with the threat of relocating the investment that the Thai economy had by now come to depend on.

The impacts of the 2011 flood crossed administrative boundaries within the country, pitting provincial and district authorities against each other. The impacts also went beyond national boundaries of Thailand. The economic costs of the floods have been widely reported. Since Thailand had become the centre for a globalised production chain, particularly of hard drives, computer chips and also car parts, the impacts of flooded warehouses and shutdown production had rippling effects across the globe (Fuller 2011). Production in the USA and Japan that depended on these inputs ground to a halt, with implications for globalised markets, and of course, employment security for workers involved in these industries.

There is another side to this story that has not yet been investigated adequately. Thailand is not only a regionalised economy in terms of production but also in terms of absorbing labour. Whereas Thailand was exporting labour to other parts of Southeast Asia and the Gulf through the 1990s, Thailand has now become labour short, and an importer of labour. Much of the economy depends on migrant labour from Myanmar, Cambodia and increasingly from Vietnam and Laos. Statistics for the levels of such migrant labour are inconsistent and generally thought to be significant underestimates. Official figures suggest a total number of migrant workers of around 3.25 million (Huguet 2014, p. 1), but suggestions that there are about three million workers from Myanmar and over one million from Cambodia seem plausible.

These workers send remittances back to their rural homes, and thus provide critical financial resources to struggling rural society in the region. In many ways, migration of rural labour can be seen as evidence of increasingly stretched livelihoods (cf. Winkels 2011). One of the questions as yet unanswered regards the implications of loss of income and other impacts of the floods on migrant workers—and the implications for their homes, particularly in rural Cambodia and Myanmar. An emerging concern relates to the importance of remittances in ensuring household viability, but also that rural livelihoods that depend on these remittance flows are highly precarious, susceptible to a wide range of shocks and crises.

The ways in which migration patterns and climate-related shocks are interlinked is further revealed in the case of migrant workers in Phuket. Migrant workers from Myanmar in Phuket live a precarious existence. With a complex process of legal

registration, and an employment market that is dominated by a network of well-connected agents and brokers, interviews with local migrant rights activists suggest that only one third have access to all the labour rights and social services to which they would normally be entitled.

In addition to the violations of basic rights, and the informality of their employment status, the vulnerability of these migrant workers can also be seen through the ways in which they access critical urban systems. Workers either live in camps established by the construction firms for whom they work, or in informal communities that are located in marginal land—for example, along a former mangrove forest that has been cleared by Thai investors in order to locate rental accommodation for the migrant workers. In addition to the problems migrant workers have in accessing basic social services of education and health, access to water and electricity is outside of formal systems, with service costs disproportionately high, and of poor quality.

A further twist to this story of migration has emerged recently from interviews with stakeholders in southern Thailand. Government clampdowns on migrant workers throughout 2015 combined with a downturn in the economy has pushed many migrant workers from Myanmar out of Thailand. However, the floods that have hit many parts of Myanmar during the rainy season of 2015 have pushed an additional group of labourers across the border into Thailand. This provides an interesting dimension in which vulnerability created by precarious employment status and rights becomes linked to disaster migration. Of course, the migrant workers who have moved as a response to flood impacts in their own country also find themselves living in vulnerable locations, with poor access to urban systems and services and limited rights. The story comes full circle.

With El Niño taking effect in 2015/2016, an intense drought brought reservoirs to all-time lows and raised concerns that water supply for urban centres and industrial parks could not be met from available supplies. The first response across the country was to restrict irrigation supplies to rice farmers—once again, relocating risk from urban to rural locations. Additionally, the drought revitalised old infrastructure plans, with large river basin diversion schemes from the Mekong mainstream into the Northeastern river basins of Chi-Mun being brought back to the policy table, and negotiations for China to release more water from their upstream dams to provide water for downstream countries. Again responses to crisis are shaped by the path dependency of previous investments and agendas.

6.9 Conclusion

This chapter has sought to lay out some exploratory thoughts on how to approach the increasingly cross-border dimensions of climate vulnerability that emerge from viewing urbanisation from the perspective of regional economic integration, and from the perspective of dependence on critical systems of infrastructure and

technology. In this final section, we aim to point to the potential implications of such approaches both for fields of research and academia, and also for policy.

Both the regional dimensions of urbanisation and the complex systems perspectives steers us towards the need for understanding vulnerability to shocks and crises that will be multi-scale, interlinked and interlocked, with impacts that cascade across locations and people, and that precipitates actions that also then creates new rounds of potential shocks and crises.

Underpinning patterns of urbanisation across the Mekong region is the tension between the rationality of capital's investment in transforming land values, and the ecological functions of a part of the world that is largely characterised by wetlands and floodplains. The main response to emerging vulnerabilities to flood and drought that this investment creates is to redistribute and disperse risk—through construction of site-specific infrastructure, extraction of resources from a more distant hinterland, and hedging a wide portfolio of investments in multiple locations.

This is not to say that the interest in spatial characteristics of vulnerability, risks and hazards should be abandoned, but it will be increasingly important to factor in the ways in which the impacts of specific events cascade across locations. This requires a more global analysis of the ways that regions are being created through means of economics and of infrastructure and technology, and a political economy grounded analysis of the drivers of urbanisation that contribute to the ways in which vulnerability and risk are calculated, created and distributed. An analysis of disaster risk that goes beyond spatially bounded analysis and action also points to the need to rethink policy and practice around social protection, and social and environmental safeguards for infrastructure development.

The consequences of cascading impacts of shocks and crises across different locations raises enormous problems for current governance mechanisms, whether in terms of environmental governance or in terms of disaster risk reduction and social protection. With such high rates of labour migration in the GMS, much of the rural economy of the region is dependent on remittances that come from urban and industrial areas that are themselves increasingly vulnerable to shocks and crises. Yet the mechanisms for social protection, and in particular emergency relief in the face of a specific disaster, are focused on the location of the event rather than where the impacts are felt most acutely. Yet it may well be that the most significant economic and social impact of an event will be quite distant from its actual location. Of course this raises problems for social protection: understanding the vulnerability of a Cambodian rural household is directly influenced by potential disruptions to remittance flows, and that these in turn may be influenced by climate-related shocks located far away. Again, there is a need to rethink these approaches with similar challenges of needing to act across administrative jurisdictions.

The cross-border dimensions of disaster risk also raise challenges for the governance of infrastructure investments that underpin this regional integration. The remit of local government is territorially defined, with no jurisdiction or mechanisms in place to address broader infrastructure and technology systems. Additionally, much of the investment in and ultimately ownership of the infrastructure and technology systems is in the hands of the private sector. The rationality of

private-sector calculations of risk is partly around reducing direct impacts, but also mitigating the severity of impacts by hedging investments in different locations. Even at this site level, the governance mechanisms to reduce risk—whether land use planning, Environmental Impact Assessment (EIA) or regular environmental monitoring—are rarely functioning in any meaningful way, and are increasingly under threat from repressive governments.

Spatially oriented approaches to climate impacts only make sense if cities are seen in isolation from the broader processes of urbanisation and transformation outlined above. Alternatively, applying a conceptual approach that combines complex-systems and actor-oriented approaches to urbanisation within the context of global climate change debate, creates opportunities for rethinking issues of risk, vulnerability, impacts of disasters and moreover, of adaptation, mitigation and resilience.

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