# 1 Introduction

"Where is tourism? As soon as people started speaking, that was one of their first questions ... even within the first week ... Will the tourists ever come back to Khao Lak? What is going to happen to us?" (English trainer, pers. comm. 9 February 2007).

## 1.1 The 2004 Sumatra tsunami and its impact on Thailand's tourism destinations

On the morning of 26 December 2004, the subduction of the Indo-Australian tectonic plate beneath the overriding Burma plate generated a massive megathrust earthquake with a magnitude of 9.3 (Fellman, 2005; Titov et al., 2005). Its epicentre was located approximately 255 kilometres south-south east from Banda Aceh (3.4°N 95.7°E) in Northern Sumatra (USGS, 2010). The vertical uplift of the seafloor along the 1300 kilometre rupture displaced an estimated 30km³ of water, triggering the deadliest and most destructive tsunami in recorded history (British Geological Survey, 2005; Stein and Okal, 2005). The local time at Banda Aceh was 7:58:53am (00.58 UTC).

The multiple tsunami waves radiating outward from the source achieved run-up heights of up to 30 metres above sea level, impacting the lives of countless coastal communities in 14 countries bordering the Indian Ocean and killing more than 228,000 people (Mangkusubroto et al., 2009; UNISDR, 2006). The countries affected include: Indonesia, Malaysia, Thailand, Myanmar (hereafter referred to as Burma), Bangladesh, India, Sri Lanka, Maldives, Somalia, Seychelles, Kenya, Tanzania, Madagascar, and South Africa. Figure 1.1 shows the main countries affected along with the maximum wave heights in deep water and the tsunami wave travel times as the tsunami travelled across the Indian Ocean. The highest tsunami waves spread east to west as the displaced water column moved laterally away from the north-south fault line as indicated by the black boxes in Figure 1.1 (RMS, 2006). Figure 1.2 shows the estimated tsunami run-up heights recorded in those countries closest to the
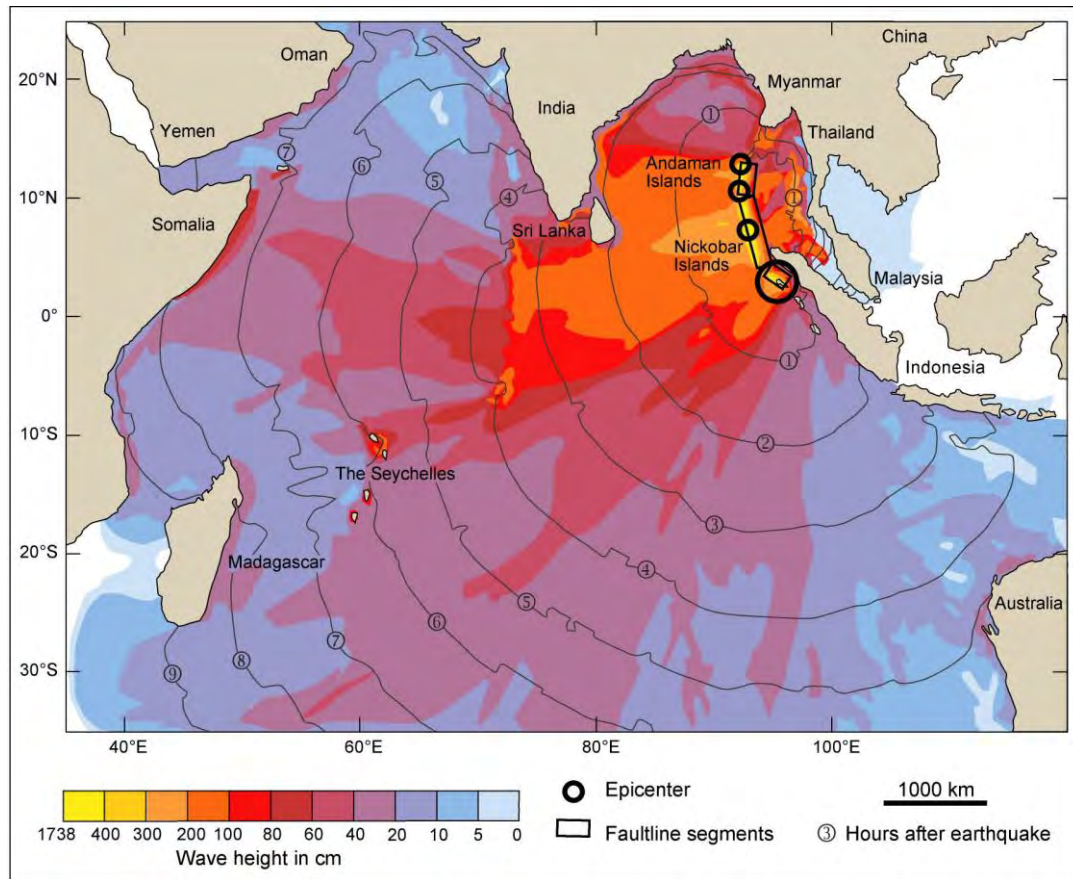
Source: adapted from NOAA/PMEL Tsunami Research Program (2005a; 2005b).

Figure 1.1: Height of the tsunami waves and wave travel times across Indian Ocean
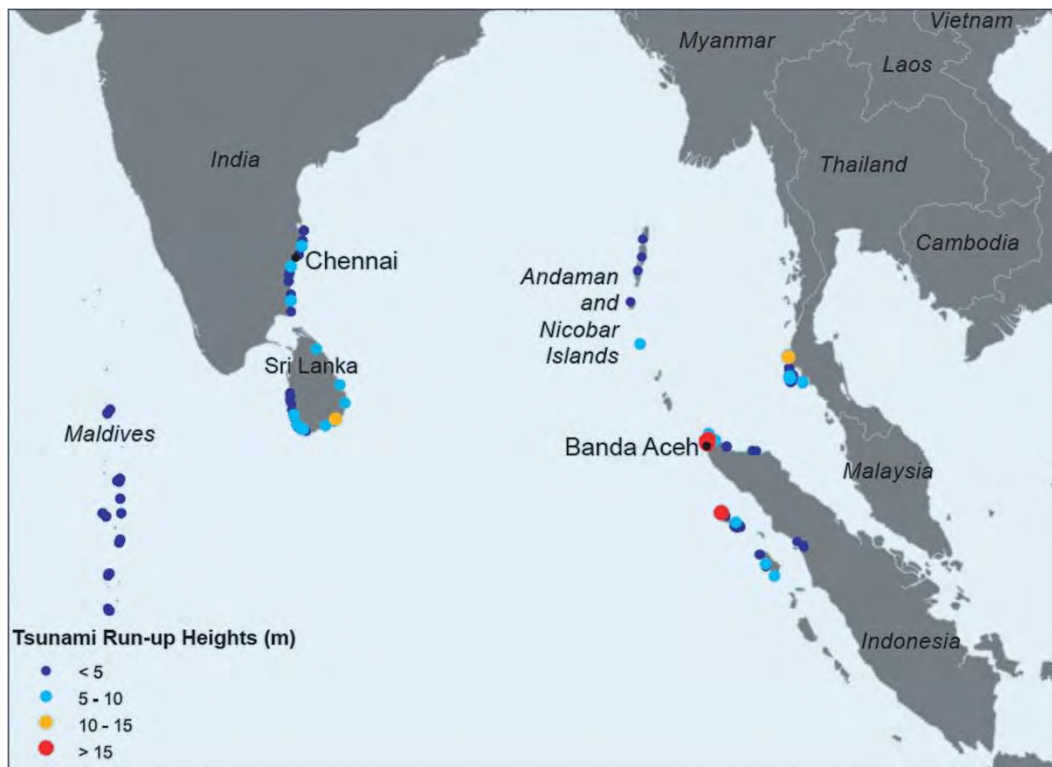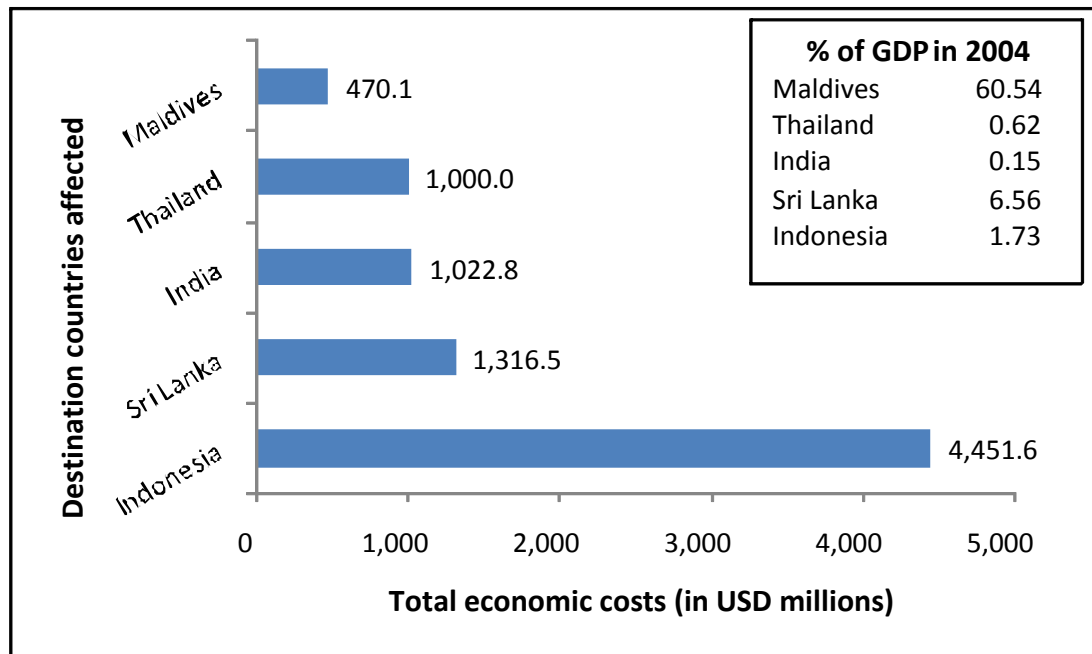

Source: adapted from RMS (2006: 4).

Figure 1.2: Run-ups heights recorded in the countries closest to the epicentre

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Table 1.1: Number of tsunami deaths in worst affected countries

Country	Number of deaths
Indonesia	165,708
Sri Lanka	35,399
India	16,389
Thailand	8,345
Maldives	102

Source: data from CRED (2010a).

Source: Economic data from CRED (2010a) whilst 2004 GDP baseline data from Nation Master (2010).

Figure 1.3: Economic cost of damages sustained[*]

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[*] The economic impact amounts listed here are estimates that include direct (e.g. damage to infrastructure and crops) and indirect (e.g. loss of revenues, unemployment, market destabilisation) consequences on the local economy in the value of the year of the disaster (CRED, 2010b).

Another note about the use of symbols instead of numbers to mark footnotes. Symbols are used throughout the thesis for footnotes to differentiate them from the numbers 1 to 279 that are used to reference the information obtained from the 279 interview participants (see Section 4.9 in Chapter 4 that discusses methods in detail).

epicentre of the earthquake. The highest costs both in terms of lives and damages were experienced in Indonesia, Sri Lanka, India, Thailand and the Maldives (see Table 1.1 and Figure 1.3 respectively).

Many of the devastated areas were popular tourism destinations filled with international tourists at the peak of the high season. Some coastal resorts in India and Malaysia were affected but the greatest damage to the tourism sector was sustained in Sri Lanka, the Maldives, and Thailand (Henderson, 2007a; UN-WTO, 2005a). The rapid onset of the tsunami waves in some locations such as Indonesia, Malaysia, the Nicobar and Andaman Islands and Thailand (shown in Figure 1.2) meant that many of the victims were taken completely by surprise. For these communities, prior warnings generated from an Indian Ocean Tsunami Warning System would have arrived too late (see Dominey-Howes et al., 2007). The rare sight of the receding sea induced a number of people to inspect the exposed seabed and collect stranded fish, with fatal results (Block, 2004).

Thailand‟s travel and tourism industry, which accounts for 6.4 percent of Thailand‟s Gross Domestic Product (GDP) and 10.6 percent of total employment, sustained the greatest tourism losses as a result of the tsunami (WTO, 2005; WTTC, 2008). The tsunami caused extensive damage to six provinces located along a 400 kilometre stretch of the Andaman Coast in southern Thailand - Ranong, Phang Nga, Phuket, Krabi, Trang and Satun - with a combined population of 1.9 million (UN, 2005). Those living along the Andaman Coast are highly dependent – directly or indirectly – on tourism (WTO, 2005). In 2004, these provinces (Figure 1.4) generated 17 percent of Thailand‟s total tourism revenue (UN, 2005). A total of 8,345 people were killed in Thailand, including 2,448 foreigners from 37 countries (CRED, 2010a; UN, 2005). The highest numbers of tourist casualties were from Sweden (543) and Germany (468) but a significant number of Finns (158), Swiss (83), Norwegians (79), Britons (79), and Austrians (69) also lost their lives (UN, 2005).

The tsunami not only claimed the lives of thousands of tourists and industry workers but also left the livelihoods of the surviving destination community[†] residents in disarray (Handmer and Choong, 2006; Rigg et al., 2008; Rigg et al., 2005). More than 97 percent of Thailand‟s damage was incurred by private properties, with much of this loss falling on the tourism

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[†] The term *community* - a cultural construct - is a contentious term, evoking numerous interpretations based around feelings of belonging, geographically bounded spaces, race, age, sexual orientation, and gender to name as few (Pain et al., 2001). However, for the purposes of this study *community* is characterised as a discrete bounded space populated by people with shared social networks and/or modes of expression and identity (see Johnston, 2000a; Pain et al., 2001). In *destination communities* shared social networks can be based around family, business, ethnicity, and religion. However, one common factor for me is their shared choice of occupation that revolves around the provision of a tourism service in a given destination with a distinguishable market identity.

industry (Scheper and Patel, 2006; TEC, 2005). The tsunami destroyed 25 percent of the total hotel room capacity in the six affected provinces resulting in an estimated tourism infrastructural loss of USD340.9 million (UN, 2005). In comparison, 24 of the 87 resorts located across the Maldives were damaged, with rebuilding estimated at USD100 million as of 2005 (UN-WTO, 2005a). Of Sri Lanka"s 246 hotels, 25 were still closed by the end of January 2005 - the worst of the damage was concentrated in the south - resulting in an estimated restoration bill of USD195 million (UN-WTO, 2005a). Tourist arrivals in the affected provinces decreased by 53 percent in the six month period following the disaster, causing revenue losses of USD1.4 billion at a time when funds were desperately needed for rebuilding and staff remunerations (UN, 2005). Approximately 120,000 tourism-related jobs were lost in Thailand, and incomes were significantly reduced (UN, 2005; Young, 2005).
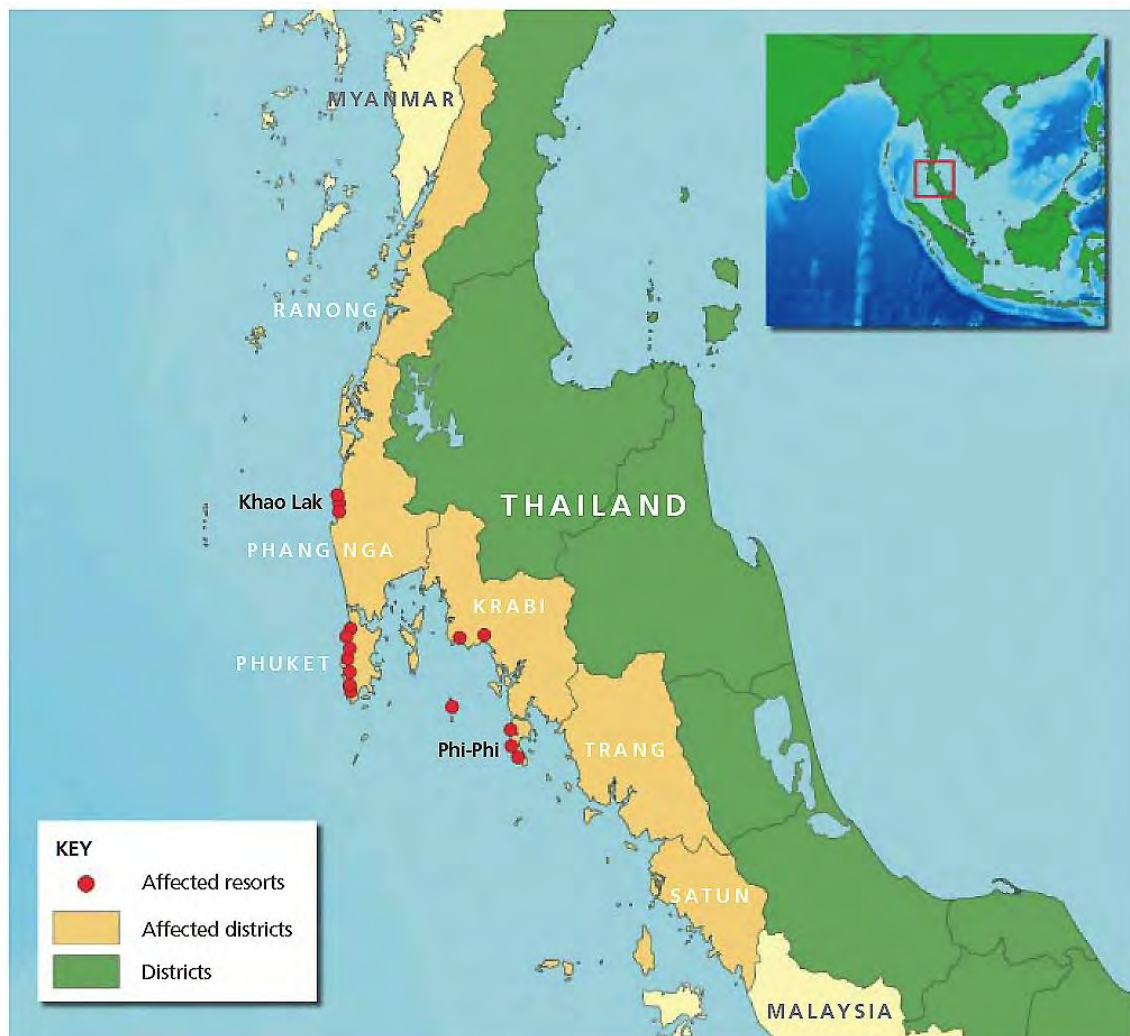
Source: Guy Carpenter (2005: 11).

Figure 1.4: Provinces affected by the tsunami in Thailand

Given the economic importance of tourism to the affected Thai coastal communities, a revival of the tourism industry was vital (Handmer and Choong, 2006). Tourism not only provides employment and investment opportunities to these communities, but the industry"s recovery was also needed to stimulate trade, business, and construction activities. In the aftermath of the tsunami, the provision of immediate emergency relief, the restoration of basic services, and the rebuilding of damaged infrastructure in destination communities were of paramount importance. That said, in post-disaster scenarios such as this, it is not enough to respond to the emergency phase only. As the immediate needs of the affected communities are tended to, attention must be redirected toward longer-term preparedness strategies that aim to reduce vulnerability and increase a community"s capacity to cope and respond to future shocks (ACTPPR, 2005; Bernard et al., 2006; Huppert and Sparks, 2006; Miller et al., 2005; Sieh, 2006). For this to occur, it is necessary to identify and address the drivers of vulnerability in the affected communities, and to build on existing capacity (Huppert and Sparks, 2006; Miller et al., 2005; Wisner et al., 2004). Long-term resilience plans aimed at securing future sustainable livelihoods cannot be operationalised successfully without understanding and addressing the underlying socio-political processes and environmental linkages that form the foundations of vulnerability (Clark et al., 2000; Pelling, 2003; Thomalla et al., 2006; Turner et al., 2003). Knowledge gained from vulnerability assessments underpin adaptive strategies and preparedness (Birkmann, 2006).

The vulnerability of destination host communities to a myriad of compounding shocks and stressors is an ongoing and rising concern for researchers and industry stakeholders. A review of the tourism literature reveals that our knowledge on the causal factors and processes that create and perpetuate vulnerability in tourism destinations is limited (discussed further in Chapter 2). The few destination vulnerability assessments (hereafter referred to as DVA) that have been conducted tend to be very narrow in their focus. Much of the published work focuses on a few select factors and, in doing so, fails to capture the complexity of vulnerability and its contextualised manifestation in a given place. But there is a more fundamental problem with current research on destination vulnerability; there are few theoretical parameters for furthering our knowledge and guiding more comprehensive assessments (see Chapter 3).

The identification of these two gaps in our current knowledge-base prompted my undertaking of a preliminary DVA in 2005 of the Thai destination of Khao Lak, the worst affected tourism destination in terms of lives lost and structural damage (see Calgaro, 2005; Calgaro and Lloyd, 2008). The findings of the Khao Lak case study provided significant insights into understanding the causal factors that heighten destination vulnerability and reaffirm the need

for DVAs. But given the exploratory nature of this work, more research was required to substantiate the identified drivers of vulnerability in other tourism communities and destination contexts and further develop, evaluate, and refine the theoretical framework employed in the Khao Lak study. This PhD therefore builds and expands upon the foundational work of 2005 to meet the following two outstanding needs.

1.2   Aims and objectives

In the wake of the 2004 Indian Ocean tsunami, this PhD aims to:

1. Develop a theoretical framework for assessing the vulnerability and resilience of destination communities to shocks and stressors; and

2. Use this framework to guide a comparative DVA of the tsunami-affected Thai destinations of Khao Lak, Patong, and Phi Phi Don to better understand the complexity of destination vulnerability and its evolution in different places and developmental contexts.

To achieve these aims, the main objectives are to:

a. Develop a conceptual vulnerability framework for assessing the vulnerability and resilience of tourism destination communities;

b. Use this framework to facilitate the identification and comparison of the social, political, economic, and environmental factors and processes that determine differential vulnerability levels within and across the tsunami affected Thai tourism destinations of Khao Lak, Patong, and Phi Phi Don;

c. Explore the evolutionary processes and contextualised discourses that shape destinations and their vulnerability over time and space; and

d. Use the empirical findings from the three case studies to evaluate the effectiveness of the new Destination Sustainability Framework (DSF) in assessing and understanding the vulnerability of tourism destination host communities to external shocks.

The development of a new framework for assessing destination vulnerability is a significant theoretical advancement in this area of research because it fills a substantial theoretical void in our knowledge-base. To date, there are few rigorous frameworks for understanding and guiding the assessment of destination vulnerability and resilience to shocks and stressors. But there are more advantages in undertaking this type of study that places equal weight on theory creation and empirical vigour.

From a *theoretical perspective,* one great advantage of developing a theoretical tool for assessing destination vulnerability and applying it to the empirical problem of the 2004 tsunami‟s impact on three Thai destinations, is that it demonstrates the framework‟s practical relevance and usage. The purpose of social theory is to help explain social reality or some component of it (including phenomena) (Hesse-Biber and Leavy, 2006; Leedy and Ormrod, 2005), but those ideas generated from social reality extend further than what has been empirically investigated (Hesse-Biber and Leavy, 2006: 17). Therefore, the very nature of theory creation and advancement demands continuous cycles of real world application and reflection (Bhaskar, 1986; Tavallael and Abu Talib, 2010). This retroductive step is crucial for critical realists like myself who take the philosophical view that although we perceive the world from a particular viewpoint, the world acts back on us to constrain the points of view that are possible (Dean et al., 2005; Seale, 1999). Ensuring the relevance of theories of tourism, vulnerability, and sustainability is also important for two other reasons. First, these areas of research are problem-driven and user-inspired (Clark, 2007; Clark and Dickson, 2003; de Sausmarez, 2007; Miller et al., in press; Moser, 2009). Second, by undertaking this necessary retroductive step, this thesis bridges a noticeable gap between vulnerability conceptual frameworks and empirically based case studies, where theory application or even reference to a guiding conceptual tool is rare. This will be discussed further in Chapter 2.

The *empirical* advantages of undertaking a comparative DVA over a five-year period (beginning in 2005) are fivefold. First, undertaking a comparative DVA in three different destinations and contexts enables the identification of both common factors that heighten destination vulnerability, as well as those factors that are specific to a particular physical locality, community, and context. Second, the choice of three destinations that are at different stages of development and sustained different levels of damage (see Chapter 4) provides an opportunity to explore the relationship between development levels, destination placement and popularity, sustained damage resulting from the tsunami event, and vulnerability. Third, this knowledge creates a solid grounding for the development of robust resilience building strategies and more sustainable futures for tourism dependent communities. Being holistic and proactive in nature, vulnerability assessments champion the strengths of the target group or population, whilst uncovering the historically embedded and emerging weaknesses in the human–environment system within which the communities operate. Pinpointing and explaining these weaknesses and the scale at which they occur opens up opportunities for action, change, and transformation. It enables destination communities, governance bodies, and policy makers to adjust current practices, then to formulate and apply new strategies where they are most effective, based on trade-offs amongst the different interests in society (Jäger et al., 2007). Fourth, critiquing the evolution of the causal factors and underlying

processes over a five-year period provides valuable insights into the creation (past), perpetuation (present), and the possible rise of vulnerability (future). A longitudinal study also enables the mapping of long-term consequences of coping strategies and adaptation responses (or lack of), and the underlying choices, reasonings, and actions that have determined success or failure in a given system. Finally, this comparative data provides a solid foundation for informing theory on destination vulnerability and its perpetuation over time and space. This retroductive step of using real world experiences to anchor and enrich social theory ensures theoretical relevance.

Human geography is well-placed to further our empirical knowledge and theoretical conceptualisation of vulnerability given that the foci of the discipline - understanding dynamic nature-society relationships, the importance of place and spatial variability, multi-scaled interactions, and the temporal patterns of these multiple interactions - aligns closely with key characteristics of vulnerability as a phenomena. Geography has played a fundamental role in furthering our understanding of nature-society interactions and lies at the core of vulnerability science and sustainability science (Clark and Dickson, 2003; Cutter, 2003; Glacken, 1967; Moser, 2009). Much progress in understanding and redressing vulnerability stems from physical and human geography (Cutter, 2003). Physical geography has contributed greatly to the identification of possible environmental threats through the mapping of exposures and their consequences, and risk/hazards approaches (Cutter, 2003; Eakin and Luers, 2006). Human geography, on the other hand, has made contributions to the theorising of place-based vulnerability to environmental change, social change, and decision-making, and has also identified linkages between resource access and entitlements and vulnerability (Adger, 2006). This thesis continues this tradition by again placing geography at the forefront of theoretical and empirical advancement of vulnerability approaches and sustainability science through the application of the key geographical concepts of place, relational scale, and time.

1.3   Part of a grander plan: Collaborating with the Stockholm Environment Institute (SEI)

My PhD was undertaken as part of a larger research program headed by the Stockholm Environment Institute (SEI) between 2005 and 2009. The relevance of my 2005 Khao Lak pilot study findings to the rebuilding process led to parts of my PhD project being incorporated into a wider SEI programme entitled *Sustainable Recovery and Resilience Building in the Tsunami Affected Region*. Commissioned and funded by the Swedish International Development Cooperation Agency (Sida), this five-year programme was designed to support the post-tsunami recovery in Sri Lanka, Thailand and Indonesia through the generation of knowledge and capacity building. The findings from my 2005 study

(Calgaro, 2005), along with my PhD aims and objectives, provided the intellectual directions for one of the programme"s five sub-projects, forming the basis for the proposal for Sub-project 4. The five sub-projects are listed in Table 1.2.

Table 1.2: Projects included in SEI's tsunami programme

1. Regional Tsunami Vulnerability Assessment: for immediate and longer-term sustainable recovery

2. Early Warning and Community Preparedness

3. Public Administration, Coastal Zone Disaster Preparedness, and Vulnerability

4. **Sustaining Coastal Communities – Aiding Livelihood Recovery and Increasing the Resilience of the Tourism Sector**

5. Sustainable Water and Sanitation for Household/Community Systems

Source: adapted from Thomalla *et al*.(2009).

My PhD corresponds directly with Work-package 1 of Sub-project 4, the aim of which was: to undertake a comparative vulnerability assessment of Khao Lak (Phang Nga Province), Patong (Phuket Province), and Phi Phi Don (Krabi Province), in order to provide the foundational knowledge needed to help identify appropriate economic, policy, and/or institutional changes that would build more resilient tourism destination communities. A corresponding assessment in Sri Lanka was headed by Janet Cochrane at Leeds Metropolitan University in the UK (see Cochrane, 2009).

My role in Sub-project 4, entitled *Sustainable Recovery and Resilience Building Strategies in the Tourism Industry,* began in 2007. The theoretical framework and methods that I developed in 2006 for my PhD research, and my chosen case studies, were adopted for use in SEI"s parallel tourism project. Accordingly, the ideas and framework presented in this thesis, the methodology used to fulfil my PhD aims and objectives, and the PhD informational needs, were chosen and designed by me independently of SEI. More detail about the three member SEI team (which included myself) and the roles of each member in the fieldwork phase of the joint project is given in Chapter 4.

Whilst the comparative Thai DVA formed the common element between my PhD and SEI"s tourism research project, the projects differ greatly with regard to their intended purpose and the subsequent usage of the common information gathered. My PhD focuses *both* on theoretical and empirical advancement, through the fulfilment of three essential aims. The

first of these was to develop a *theoretical* framework for assessing the vulnerability and resilience of destination communities to shocks and stressors, so as to better understand the causal factors and processes that create and perpetuate vulnerability and hinder resilience. The undertaking of the *empirical* component of my PhD fulfilled the other two aims: (i) to operationalise the framework and gauge its usefulness in assessing destination vulnerability in a real-life setting, and (ii) to gain in-depth knowledge on those causal factors and processes that heighten destination vulnerability. In comparison, the comparative DVA in Thailand was used by SEI to: (i) obtain the necessary information needed to pinpoint the ongoing needs of Khao Lak, Patong, and Phi Phi Don and, (ii) inform the design of appropriate resilience building strategies to heighten their resilience to future shocks and stressors. My theoretical framework featured only as a tool to guide the empirical analysis in the SEI project.

The target audiences for the final outputs of my PhD and SEI's tsunami program are also disparate. The SEI reports (available from www.sei-international.org) are targeted at informing development practitioners and policy makers, such as government departments and non-government organisations (NGOs), of the issues that continue to hamper recovery and resilience building strategies in tourism destinations located along Thailand's Andaman Coast. My thesis has an academic audience. Of the five SEI reports produced, I am first author on three reports (Khao Lak case study report, Thailand comparative report, and the Sri Lanka/Thailand comparative report) and second author on the Patong case study report. The empirical analysis presented in this thesis is closely aligned with the evidence presented in the Khao Lak case study and Thailand comparative reports that I researched and wrote (Calgaro et al., 2009a; Calgaro et al., 2009b) with some input from other SEI team members in the initial stages of the empirical data analysis. However, the empirical analysis presented in the following chapters differs by providing more theoretical depth, and places more emphasis on the contextual influences that have shaped differential levels of vulnerability across Khao Lak, Patong, and Phi Phi Don. This different emphasis again reflects the distinct purposes and audiences of the two parallel research projects.

My collaboration in the larger SEI research program was extremely beneficial for me as an early career researcher, and broadened the empirical scope of my PhD. SEI's funding of the fieldwork component of the research and my inclusion in the three-member team enabled us to collect a greater amount of data, resulting in the more detailed and representative comparative DVA presented in this thesis. My inclusion in the SEI research program also had other advantages; working as part of a cross-cultural research team with Thai researchers facilitated a deeper understanding of the contextualised Thai cultural issues that influenced

vulnerability and resilience levels in the chosen case studies. It also gave me valuable experience in co-ordinating a small research team in a post-disaster setting, where localised knowledge and contacts proved invaluable to the successful undertaking of the fieldwork. Finally, being included as part of SEI"s wider *Risk, Livelihoods, and Vulnerability Research Programme* and the team that undertook the research for the larger *Sustainable Recovery and Resilience Building in the Tsunami Affected Region Programme* exposed me to the very practical application of sustainability science and vulnerability research in a development context.

1.4   PhD structure

The enormity of the Great Sumatra-Andaman Earthquake and subsequent Indian Ocean tsunami is very much evident from the facts and figures presented in Section 1.1. But this thesis is more than a compilation of scientific findings. First and foremost, this thesis tells a story of three Thai tourism destination communities – Khao Lak in Phang Nga Province, Patong in Phuket Province, and Phi Phi Don in Krabi Province – that were badly affected by the tsunami disaster. It introduces the reader to Khao Lak, Patong, and Phi Phi Don, and describes the impact the disaster had on each. This thesis then looks at the pre-disaster conditions and processes, to better understand the extent of the disaster"s impact on each community, and also considers those post-disaster processes that have determined their differential rates of regeneration over time and space. To achieve this, this thesis uses a new and innovative theoretical framework that incorporates complementary theories from vulnerability research, resilience thinking, sustainability science, and human geography. But what is meant by vulnerability and do other tourist destinations face similar challenges? Chapter 2 answers these fundamental questions.

Chapter 2 explores the meaning of vulnerability and identifies the types of events that destinations are vulnerable to. This is followed by a comprehensive review of the existing tourism literature on crisis management and climate change, to ascertain what is known about destination vulnerability, what factors heighten it, and what is still missing from our knowledge base. Having identified a lack of well-rounded knowledge on destination vulnerability and theoretical parameters for its assessment in Chapter 2, Chapter 3 aims to fill this gap through the design of a theoretical framework to advance our understanding and conceptualisation of destination vulnerability, and to facilitate its assessment. Accepting that theory creation is coloured by a researcher"s ontological and ideological positioning, the organic process of designing a destination vulnerability framework begins with an outline of my own positionality and its impact upon my subsequent theoretical choices. This is followed by a review of how current tourism approaches to sustainability are framed, so to position

this theoretical enquiry within the wider discussion on tourism and sustainability. The next step in the theory building process includes a critique of three systems approaches – chaos-complexity theory, resilience thinking, and vulnerability approaches – and their usefulness in better understanding tourism destinations and their vulnerability to shocks and stressors. The remainder of the chapter is then dedicated to the presentation of a *new* and *innovative* theoretical framework – the *Destination Sustainability Framework* – that incorporates complementary theories and ideas from vulnerability research, resilience thinking, sustainability science, tourism approaches, and geographical theories of place, relational scale, and time.

The foundations of every vulnerability assessment are built upon two fundamental questions: *Who* is vulnerable and *to what*? Chapter 4 answers these questions. The reader is introduced to Khao Lak, Patong, and Phi Phi Don as destinations and explains why they were chosen as case studies. It explores their characteristics - image, destination placement as a product, and main markets - and main attractions. This is followed by an account of the 2004 Indian Ocean tsunami, its impact upon the three Thai destinations, and their differential rates of recovery. The second part of the chapter moves on to detail the methods that were used to collect the rich data needed to assess the multidimensional and complex issue of destination vulnerability in the three destinations, and reflects on the challenges of undertaking research in a post-disaster tourism context.

Chapters 1 to 4 set the scene for my research by identifying the problem of destination vulnerability in the context of the 2004 Indian Ocean tsunami and presenting the necessary tools (the Destination Sustainability Framework and complementary methods) needed to analyse the complexity of destination vulnerability. Chapters 5, 6, and 7, however, mark a distinct shift in the focus of the thesis. Following the structure of the Destination Sustainability Framework, Chapters 5 to 7 present the empirical findings of my research to explore the causal factors of destination vulnerability and explain why Khao Lak, Phi Phi Don, and Patong were vulnerable to the tsunami. Here I operationalise the framework through the stories and experiences from Khao Lak, Patong, and Phi Phi Don. Contextual similarities and differences between the three destinations are explored, as are their role in contributing to differential levels of vulnerability and resilience.

Chapter 5 explores those physical characteristics that determined differential *exposure* prior to the onset of the tsunami and subsequent damage levels in Khao Lak, Patong, and Phi Phi Don. These include the unique place-based biophysical attributes of each destination and the nature of the built environments, including development patterns and settlement locations.

Whilst Chapter 5 focuses on the environmental attributes of the coupled human-environment system, Chapter 6 concentrates on the social dimension of the system. It examines the pre-existing economic, social, and political conditions that heightened the *sensitivity* of each destination to the tsunami event, and explores how these influenced the ability of the communities of Khao Lak, Patong, and Phi Phi Don to anticipate and immediately respond to the disaster. Woven throughout the analysis are reflections on the role contextualised factors – dominated by power systems, ideologies, cultural norms, perceptions and agendas – played in determining differential access and entitlements to capital and, in turn, sensitivity levels within and across the three destinations. Chapter 7, in contrast to the two preceding chapters, examines the immediate emergency and the short- and longer-term post-disaster actions and strategies that were undertaken to help stabilise the affected tourism destinations and assist in their regeneration as international tourism destinations. It evaluates the extent to which pre-conditions in each destination (including the stockpiling of resources and the strength of existing networks) influenced each community‚s capacity to effectively respond to the onset of the disaster. It also pays particular attention to charting the impact that post-tsunami actions, inactions, and strategy failures had on the recovery rates of each destination, and the longer-term ramifications for their vulnerability to future shocks and stressors.

In the final chapter, Chapter 8, I return to the aims and objectives of this thesis and reflect on the research process and findings in order to determine whether the research aims and objectives were met. The main findings of the comparative DVA are revisited and their significance in furthering our knowledge about the underlying causal factors and drivers of destination vulnerability reviewed. Attention then turns to the appraisal of the usefulness of the new Destination Sustainability Framework in helping to better understand the complexities of destination vulnerability, the significance of its development for theory advancement in tourism research, and theoretical implications for wider vulnerability approaches. I then take a step back to reflect upon the research process, including the challenges and limitations faced in undertaking this research, before identifying future research needs.

2 Vulnerability of tourism destinations to shocks

2.1 Introduction

Why is it important to understand destination vulnerability and what do we already know about destination vulnerability? This chapter provides answers to these fundamental questions, beginning with a review of the types of events that tourist destinations have proved vulnerable to. This is followed by an examination of the meaning of vulnerability and its different conceptualisations by four research traditions: food security and livelihoods, risk and natural hazards, sustainability science, and climate change. With these fundamental questions behind us, the focus then turns to determining what is already known about destination vulnerability. Current insights into destination vulnerability, and the causal factors and processes that heighten it, are taken from the established body of research on crisis management in tourism and more recent contributions from climate change research. The chapter concludes with a critique of the crisis management and climate change tourism literature by evaluating how well this work explains destination vulnerability, and identifying what is still missing from our knowledge on destination vulnerability.

2.2 Vulnerability of tourism destinations to shocks

The vulnerability of tourism destinations to a range of socio-economic and environmental shocks and stressors[‡] is well recognised in tourism research and by the tourism industry (Sharpley, 2005). Political unrest and terrorist attacks have long been a concern for an industry that relies on the careful maintenance of positive images that reflect a myriad of experiences it sells to the travelling public (Baker and Coulter, 2007; Gurtner, 2004; Gurtner, 2006; Knox and Marston, 2004; Mansfeld, 1999; Richter, 1999; Richter and Waugh, 1986; Sönmez et al., 1999; Sönmez and Graefe, 1998). Other events that affect tourism flows to destinations include: economic downturns (Prideaux et al., 2003); disease and health epidemics such as Foot and Mouth Disease, SARS, Bird Flu and Swine Flu (Miller and Ritchie, 2003; Ritchie et al., 2004; Tarlow, 2009; Weich, 2003);, and a rising concern about the impact of natural hazards and global environmental change (earthquakes, sea level rise, tsunamis, decreases in snow cover, heat waves and fires) on tourism destinations (Agnew and Viner, 2001; Breiling et al., 1997; Cioccio and Michael, 2007; Elsasser and Bürki, 2002;

[‡] A distinction is made here between shocks and stressors. Shocks or perturbations are rapid onset events, Stressors are slow-onset events that are often manifestations of human-environment interactions that place increasing pressure on the localised system over time (Turner et al., 2003).

Gössling and Hall, 2006b; Harrison et al., 1999; Hay and Becken, 2007; Huan et al., 2004; Huanga and Min, 2002; Méheux and Parker, 2006; Nyaupane and Chhetri, 2009; Patterson et al., 2006; Scott et al., 2006a). Overdevelopment and the pursuit of short-term economic gains, as well as pollution and environmental degradation of non-renewable natural resources pose constant threats to the images and longevity of tourism destinations and host communities, particularly those whose appeal depends on pristine natural environments (Burak et al., 2004; Cohen, 2008; Gössling and Hall, 2006a; Hall and Page, 2002; Henderson, 2007a; Mihalič, 2000; Mooney and Miller, 2009; Petrosillo et al., 2006; Ritchie, 2008; Santana, 2003).

These events, however, do not occur in a vacuum. They take place within and are inextricably linked to a wider social-ecological context that is simultaneously shaped by multiple drivers of change (Dwyer et al., 2008). Stressors and shocks can therefore take place simultaneously, forcing communities, businesses, and households to make judgements on how to best use available resources based on calculated trade-offs, including short-term priorities versus longer-term adjustments (Tarlow, 2009). The very fact that tourism is a non-essential service leaves it vulnerable to changing consumer spending and recreation choice patterns (Higgins-Desbiolles, 2010). The recent global financial crisis saw tourism numbers drop in multiple regions including the Middle East, Asia, Europe, and Australia (ABC News, 2009; AFP, 2008; Fottrell, 2009; The Australian Jewish News, 2009) whilst increased consumer awareness of tourism‟s environmental footprint is a growing concern for industry actors (Becken, 2007; Dwyer and Forsyth, 2008). The growing popularity of using tourism as a development tool in resource-scarce regions will likely see this vulnerability increase (Baker and Coulter, 2007; Méheux and Parker, 2006). Learning to live with these multiple and often overlapping events is a challenge for an industry that is heavily dependant on a sense of well-being, relaxation, and consumer disposable income (Lew, 2003).

A review of the multiple and often compounding events that have placed greater pressure on inbound tourism flows to Thailand and its tourism sector since the 2004 tsunami perfectly illustrates this. Ongoing political unrest stemming from the 2006 Thai coup d'état (causing a violent eight-day blockage on Bangkok‟s domestic and international airports in November 2008) coupled with the global financial crisis, rising fuel costs, and territorial disputes with Cambodia has led to significant decreases in international tourist arrivals of up to 33 percent in 2008 (AFP, 2008; Business Monitor International, 2009). Further falls of 10 to 15 percent in 2009 (as of September 2009) have been attributed to the cumulative impacts of the domestic economic recession, the global financial crisis, more politically-driven violence in

April, the Swine Flu pandemic, and global oil price fluctuations (Bangkok Post, 2009; Higgins and McMillan, 2009; Thai News Service, 2009). Similar examples can be found throughout the world. The negative impact of the 2008/2009 global financial crisis in the UK combined with a strong Euro against the UK pound caused a 40 percent drop in British tourist numbers to Dublin in 2009 as Brits choose to stay home (Fottrell, 2009). Tourist arrivals to Sri Lanka recorded an annual fall of 18.2 percent (as of November 2009) as the global financial crisis and fighting between the government and Tamil insurgents intensified (Aneez, 2008). Australia"s tourism industry has also experienced tourist flow declines due to the compounding negative effects of the global financial crisis, Black Saturday bushfires in February 2009, and Swine Flu breakouts in June 2009 that led to Singapore issuing damaging travel alerts advising their citizens against travelling to the state of Victoria (ABC News, 2009; Miletic and Gregory, 2009). Whilst it may be possible to overcome the impact of one event, even one as large as the 2004 tsunami, it is the compounding effect of successive multiple (and sometimes overlapping) shocks and stressors that substantially amplify destination vulnerability levels to future shocks, since established resource-bases are eroded over time.

Following the profound impact of the 2002 and 2005 Bali bombings on tourism flows to that destination, Baker and Coulter (2007) questioned the suitability of tourism as a viable and sustainable livelihood option for populations where economic diversification is limited. They assert that "until there are fallback positions to reduce the vulnerability of those involved in tourism, the sector can never be a foundation for the development of sustainable livelihoods" (Baker and Coulter, 2007: 263). Their concern is valid but their solution untenable; a point they concede. Many remote and developing populations have few livelihood alternatives due to fragmented small economies, limited natural resources, and unequal terms of trade (Bankoff, 2003; Oliver-Smith, 1996; Wilkinson, 1989). What these populations do have are pristine environments (most of which fulfil a common tourist desire for accessible and affordable tropical „paradises") and unique cultural experiences that can be turned into enticing and lucrative commodities for the travelling public (Cohen, 2008; Nyaupane and Chhetri, 2009). So what can be done to prepare and fortify destination communities in times of risk and uncertainty? The solution to this dilemma can be found within Baker and Coulter"s (2007) assertion: *reduce the vulnerability of those involved in tourism*. Executing such a proposition involves the identification and adjustment of the underlying root causes and processes that create destination vulnerability.

2.3   What is meant by vulnerability and what are its determinants?

Defining vulnerability in the context of global environmental change research is contentious, as the concept means different things to different researchers depending on their epistemological and ontological positioning and the term"s intended use (O'Brien et al., 2007; Moser, 2009). It is not my intention here to delve into a detailed debate on definitions; this has been done elsewhere (a sample of recent reviews include Adger, 2006; Eakin and Luers, 2006; McLaughlin and Dietz, 2008; O'Brien et al., 2007; Thomalla et al., 2006; Kasperson et al., 2009). But a definition of vulnerability and its conceptualisation is needed in order to better identify connections and relevance with existing work and approaches (Moser, 2009).

The conceptualisation of vulnerability has evolved largely out of two major research traditions: (i) food security and livelihoods and, (ii) risk and natural hazards. Food security and sustainable livelihoods approaches centre on those social-political, economic, and institutional conditions that influence food-security, human welfare, livelihoods, and social differentiation and are framed within the wider context of development (see Bohle et al., 1994; Chambers, 1989; Dilley and Boudreau, 2001; Ellis, 2000; Watts and Bohle, 1993b). Informed by the theoretical traditions of political economy and human ecology (to a lesser extent), the main determinant of vulnerability from this perspective is a lack of access and entitlement to resources (also referred to as capital) needed to sustain livelihoods and life (Chambers, 1989; DFID, 1999b; Ellis, 2000; Sen, 1981; Sen, 1990). Here vulnerability is seen as a contextualised and highly politicised *social* condition that is being moderated by patterns of poverty, inequality, unequal terms of trade, modes of production, power relations, and marginalisation that play out over space and time (Bankoff, 2003; Eakin and Luers, 2006; McLaughlin and Dietz, 2008; Oliver-Smith, 1996). Particular focus is placed on power (expressed as influence exercised over others) and the dynamics of social structures and their role in facilitating unequal access to resources (McLaughlin and Dietz, 2008). Political ecologists have helped to elevate the importance of environmental processes in food security and livelihoods vulnerability debates and assessments (McLaughlin and Dietz, 2008). However, the environmental elements including ecological or physical risk and events, remain underemphasised and are seen predominantly as trigger events of change (Adger, 2006).

Hazards approaches, on the other hand, have traditionally placed emphasis on the physical environment. Vulnerability was viewed (and still is in engineering and the physical sciences) as a linear (often negative) outcome of a population‟s physical exposure to an identified hazard, measured potential of impact and loss, and realised impacts of hazards (see Brooks, 2003; Burton et al., 1978; Eakin and Luers, 2006; Hewitt, 1983; Kelly and Adger, 2000; White, 1973). Here geophysical agents were the focus, prompting the development of highly technocratic solutions from engineering and the physical sciences (Adger, 2006; Hewitt, 1983; McLaughlin and Dietz, 2008). But what happens when we cannot identify threats or their consequences (Cutter, 2003: 1)? It is impossible to calculate all the probabilities and contingencies associated with potential threats, thereby necessitating approaches that overcome the false dualism of nature and society by recognising the two as inseparable components of the interconnected living system (Cutter, 2001; Hewitt, 1983; Pelling, 2010).

The application of cybernetics and systems theory to hazards and disaster research in the 1970s (see Vayda and McCay, 1975) attempted to offer a more holistic and integrated approach (Pelling, 2010). Drawing largely from the work of Gregory Bateson and Howard Odum, this work introduced concepts, language, and mechanisms that helped theorists situate humans and society within the life supporting ecological system, and, in doing so, dissolved the theoretical gap between nature and society (Watts and Peet, 2004). Interactions between the social and natural systems were conceptualised, demonstrating backward and forward flows of energy, material, and information through the coupled human-environment system, whilst mechanisms - homeostasis,(dis)equilibrium, and flexibility - through which adaptive structures in the human-environemnt system could be maintained, were identified (Pelling, 2010; Watts and Peet, 2004).There was, however, considerable criticism of this approach that led to its demise. Whilst critics praised the cybernetic approach for providing a framework that recognised the social context as a driver of risk and adaptation in the coupled human-environment system, they argued that the framework had no way of analysing these relationships - deeper social relations of production and power were excluded (Pelling, 2010). This criticism has again surfaced in more contemporary debates on the usefulness of systems theory and resilience thinking in understanding the dynamics of the social dimension of the social-ecological system (see Section 3.3.2).

The failure of technological solutions to significantly reduce vulnerability in target populations coupled with the social dimension shortfalls found in the emerging systems theory and cybernetics approaches prompted a new wave of „alternative‟ hazards research (beginning in the 1970s) that married political economy and political ecology paradigms with the traditional

physical science models (Adger, 2006; Burton et al., 1993; Eakin and Luers, 2006; Hewitt, 1983; Pelling, 2010; Watts and Peet, 2004). These approaches, epitomised by Wisner et al."s (2004) Pressure and Release/Access to Resources Model, capture the physical conditions that heighten exposure, and the contextualised socio-political causal factors that create these conditions. Here the natural hazard or shock is seen as an independent trigger event that challenges the strength of the social-ecological system (see also Hilhorst and Bankhoff, 2003; Pelling, 2003; Pelling and Uitto, 2001; Wisner, 1993).

More recent research on climate change draws on both traditions culminating in two dominant framings (O'Brien et al., 2007: 76): (i) a scientific framing that sees vulnerability as an outcome, with the Intergovernmental Panel on Climate Change (IPCC) defining vulnerability as the summary of net impacts of the biophysical processes and mitigation responses related to climate change (IPCC, 2001a), and (ii) a human security[§] framing that views vulnerability as a contextualised characteristic, influenced by multidimensional interactions between biophysical, socio-political, economic, institutional, and technological conditions (see O'Brien et al., 2007).

Understanding the determinants that curtail resilience and heighten vulnerability within the coupled human-environment system, and their manifestation in particular places, has led to the (re)development of integrated approaches. These efforts span both social and biophysical aproaches and have emerged within the interdisciplinary research fields of sustainability science[**] (see Clark and Dickson, 2003; Kates et al., 2001) and global environmental change. Emphasis on the coupled human-environment system acknowledges that humans, as users, actors, and managers of the biophysical environment, are not detached from the physical world in which we live in. Instead, we as humans are co-creators of our environment and its evolution over space and time (Norgaard, 1995; Schröter et al., 2004; Watts, 1983). According to Norgaard (1995) and Pelling (2010), the coevolution of humans and their social-ecological environment is created in the reciprosity of interacting components - human, technological, organisational, and biophysical - operating and transforming within the evolutionary system. Accepting that human activity and biophysical processes are inextricably linked demands that equal attention in sustainability research be

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[§] In relation to global environmental change human security is defined as the condition whereby individuals and communities a) have the options necessary to mitigate and adapt to risks to their human, environmental, and social rights;, b) have the capacity and freedom to exercise these options;, and c) actively participate in attaining these options (GECHS, 1999)

[**] Sustainability science - a descriptor for the science of sustainability - seeks to understand the dynamic interactions between nature and society (that together form the coupled human-environment system) in order to improve society"s capacity to utilise the earth"s resources in a way that supports the human population long-term and sustains the earth"s life support system (Clark, 2007; Clark and Dickson, 2003; Kates et al., 2001).

given to how society shapes the environment, and how environmental change shapes society (Clark and Dickson, 2003). Vulnerability, from a sustainability science perspective, is also seen as a contextualised characteristic of the coupled-human environment system that is influenced by interactions between biophysical, socio-political, economic, institutional, and technological conditions (Kates et al., 2001; Turner et al., 2003). This perspective correlates with the human security framing used in climate change research.

Ensuring societal relevance and the usefulness of research on global environmental change is of upmost importance if transitions towards sustainability and fortifying human security amidst change is to be achieved (Eakin and Luers, 2006; Moser, 2009). The need for relevance has prompted O'Brien (2006) to echo earlier calls from Hewitt (1983), Watts (1983) Blaike et al. (1994), and Oliver-Smith (1996), (to name a few), by (re)proposing a critical rethink in the way global environmental change and disaster research is framed. Is scientific certainty and measurement of events (natural and man-made) and change most important in furthering sustainability, or should our goals be more aligned with reducing vulnerability and human insecurities and heightening a population's response and adaptive capacities to social-ecological change (O'Brien, 2006)? O'Brien (2006) and Moser (2009) argue for a greater focus on the latter – a human security framing – over preoccupations with the scientific identification, measurement, and prediction practiced in physical science-based approaches that have failed to engage society in creating the transformations needed for sustainability. Advantages of this people-centred approach are twofold. First, it enables meaningful exploration into the role place-specific differences and personal circumstances play in producing differential vulnerability and resilience levels (Alexander, 1997; Rigg et al., 2008). Second, this aids individuals and communities to respond effectively to change by challenging the drivers of vulnerability (O'Brien, 2006).

Seeing vulnerability as a contextualised and multidimensional property of the coupled human-environment system resonates strongly with current systems approaches, that combine theoretical advances from food security, hazards, climate change research, with those from sustainability science, constructivism, and systems ecology (Adger, 2006; Brooks, 2003; Clark et al., 2000; Eakin and Luers, 2006; McLaughlin and Dietz, 2008; O'Brien, 2006; Turner et al., 2003). Inclusive in nature, systems approaches characteristically look at all the components that make up a system (including humans as active actors), analyse the functionality of each component, and explores the dynamics of their interdependency along with the causal relationships and the feedback consequences of change (see Hay, 2006). Focussing on individual components of the social-ecological system does little to explain, or

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help address, the complexity of multiple interactions within the system and the resultant behaviour of the system as a whole (Clark and Dickson, 2003). Vulnerability, from the perspective of these co-evolving approaches, is defined as:

> The degree to which an exposure unit [households, human groups, ecosystems, and communities] is susceptible to harm due to exposure to a perturbation or stress, and the ability (or lack thereof) of the exposure unit to cope, recover, or fundamentally adapt (Kasperson et al., 2001: 7).

Vulnerability is place- and system-specific, contextualised, highly scaled, dynamic, and differential; a household‟s or population‟s characteristics, the multiple stressors it is vulnerable to, and its capacity to respond and adapt continuously changes over space and time (Adger, 2006; Cannon, 2008; Downing et al., 2006; Smit and Wandel, 2006; Vogel and O'Brien, 2004). These evolutionary changes are determined by three interconnected dimensions of a given location: exposure, sensitivity, and system adaptiveness[††] (also referred to as resilience and adaptive capacity) (see Nelson et al., 2007; Smit and Wandel, 2006; Turner et al., 2003). From this perspective, being vulnerable to a shock or stressor not only means that the exposure unit is both exposed and sensitive to the effects of an event or series of compounding events, but must also exhibit limited ability to effectively respond and adapt (Polsky et al., 2007: 477).

Exposure is largely a product of physical location and the character of the built and natural environment (Dall'Osso et al., 2009a; Dall'Osso et al., 2009b; Pelling, 2003: 48; Villagrán De León, 2006: 13), and is defined as the degree to which an exposure unit (who or what) comes into contact with stressors or shocks (Clark et al., 2000: 2). *Sensitivity* is defined as the degree to which a household or group is affected by exposure to any set of stresses (Clark et al., 2000), and reflects the capacity of a population to anticipate and withstand the immediate impacts of a hazard (Pelling, 2003: 48). Sensitivity is characterised predominantly by pre-existing conditions of the social and ecological system that may be improved or exacerbated by responses and adaptation strategies post-shock. *System adaptiveness* refers to a dynamic state in which a population or system is effective in responding to the convergence of multiple stresses, and incorporates adaptive capacity, short-term responses

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[††] Adaptiveness, resilience, and adaptive capacity are broadly used to delineate a household‟s, population‟s, or system‟s ability to effectively cope and adapt to a shock or stressor without losing function. Others include adaptive capacity, adaptability, and coping capacity. The terms resilience and coping capacity are used more in vulnerability research and sustainability science (see Birkmann, 2006; Turner et al., 2003) whilst adaptive capacity and adaptability, for example, are used extensively in relation to climate change research (see Brooks, 2003; Füssel and Klein, 2006; McCarthy et al., 2001; Smit and Wandel, 2006). These terms are closely aligned but are not the same despite them being used interchangeably (Nelson et al., 2007; Smit and Wandel, 2006). However, the choice to use system adaptiveness over the more common term of resilience was taken in order to limit current confusion between resilience as a component of vulnerability, a general term, and resilience theoretical approaches (Miller et al., in press).

to an event, and longer-term adjustments (adapted from Nelson et al., 2007). Like resilience, system adaptiveness can be seen as a direct expression of the strength of the coupled human-environment system reflecting its immediate response, self organisation, learning, and adaptive capabilities, and their evolution over time and space (see also Carpenter et al., 2001).

Exposure, sensitivity, and system adaptiveness are largely determined by a lack of options due to the unequal distribution of power and resources in society (Birkmann, 2006; Jäger et al., 2007; Zou and Thomalla, 2008). An individual"s or group"s ability to anticipate, withstand, and recover from shocks over time is intrinsically linked to access and entitlements to socio-political, economic, and environmental resources (Adger and Kelly, 1999; Pelling, 2003). The more access and control a household or group has to resources, the lower their vulnerability to shocks will be (Moser, 1998).

Another important determinant of differential vulnerability levels within and across communities is the mode of production operating in a given social system, which influences rates and histories of development, capital concentration and governmental regulation over capital, and labour rights (see McLaughlin and Dietz, 2008; Watts and Bohle, 1993a; Wisner, 1978). Fundamental to this conceptualisation of vulnerability, however, are the contested actions and outcomes that link human agency and scaled structures of power over time and space. Here, political economy"s focus on social structures and economic systems as the key determinants of inequality is paired with insights from constructivism that emphasise the role human agency and culture play in producing differential vulnerability among individuals and groups within and across populations, even when they confront seemingly identical risks (McLaughlin and Dietz, 2008). Disaster victims, for example, are never simply passive victims; they are also survivors and active agents (Fordham, 1999; McLaughlin and Dietz, 2008). Constructivists stress that human actors are causal agents in history and have the capacity to create and realise multiple possibilities within the context of current cultural contingencies (Emirbayer and Mische, 1998; McLaughlin and Dietz, 2008). The dynamics of vulnerability then are produced through a continuous dialectic between social structures and human agency, resulting in the co-evolution of both (Jessop, 2005).

From a constructivist perspective, values and norms are significant features of the management of resource flows, making their inclusion vital in discussions pertaining to sustainable development, environment negotiations, and governance strategies at all levels of social organisation.(Hjort-af Ornäs and Lundqvist, 1999). Hjort-af Ornäs and Lundqvist

(1999) stress that cultural and knowledge systems, along with institutions, provide the means to identify and deal with the interface between the environment and development. Resource access and distribution is therefore determined by: (*a*) the competing actions and agendas of multiple social actors, and (*b*) the strength and effectiveness of multiple-scaled governance systems and social structures (including institutions) that confer access to some resources, while restricting entitlements and influence to others (Adger, 1999; Pelling, 2003; Wisner et al., 2004). Underlying these unequal entitlement patterns are historically-embedded power structures, cultural norms, and supporting ideologies and doctrines that influence chosen development paths and permeate and bind the very fabric of society (Bankoff, 2003; Cannon et al., 2003; Cutter et al., 2000; Scheyvens and Momsen, 2008).

Given the central role that power[‡‡] and political will plays in determining vulnerability, real efforts to reduce vulnerability and risk requires change to established political and economic systems that have the capacity to facilitate a redistribution of resources and decision-making powers among the various social actors (Adger, 2003; Pelling, 2003; Wisner et al., 2004). Investing in solid social relations and building strong social capital through better governance structures and networks, improving cooperation, and equal representation not only lowers vulnerability levels but opens up opportunities for increased sustainable development and improved well-being (Jäger et al., 2007). However, considering the threat such actions pose to dominant power elites, this is one characteristic of the social-ecological system that is very difficult to change. Elite groups at the local, regional, and national levels are likely to resist changes that they cannot control (Pelling, 2003). This resistance to change and transformation has wider ramifications for vulnerability reduction: it curtails sustainable livelihood practices, and inhibits the formulation and success of long-term mitigation and capacity building strategies.

Identifying patterns of access and entitlement, and the underlying power dynamics, goes a long way in deciphering differential socio-economic vulnerability, but understanding attitudes and different perceptions (including perception of future risk) helps to explain why certain actions are taken over others. Perceptions and assumptions that influence action or non action are highly differential, contextual, socially-constructed and are influenced by several factors including: access to information, historical experiences, personal characteristics and value judgements, ideologies, culture, and economic circumstances (Baker and Coulter,

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[‡‡] The term power is a contentious term but is used here to mean influence and can be expressed in two ways. The most common conception is of power as an inscribed capacity within a social context, which can be used by an individual, network, or organisation to control or manipulate the actions of others. The second sees power expressed as an autonomous resource (power to) that is used by an individual to pursue and achieve goals (see Allen, 1997; Galtung, 1973; Howitt, 2001; Johnston, 2000b).

2007; Cioccio and Michael, 2007; Cutter et al., 2000; Johnson and Covello, 1987; Paton, 2007). So too are perceptions of risk, judgements on risk acceptability (prompting the question of *to whom*), and resultant politicisation of action and inaction (Aven and Kristensen, 2005; Cutter, 2003; Douglas, 1999; Hansson, 2010; Kasperson et al., 2003; Ord et al., 2010; Roeser, 2010). The impact of perceptions of risk, judgements of risk acceptability, and resultant weighted choices and actions on tourist flows and preparedness levels of tourism business stakeholders are significant (see Sections 2.4.1, 6.3.5, 6.4.2, and 7.3.1.3) thereby warranting deeper enquiry into risk perception determinants.

Safety engineering and risk assessments, cultural theory, heuristics, psychometric models, and philosophical approaches to risk have provided valuable insights into those factors that influence risk perception, yet each approach used in isolation falls short of fully explaining the complex mix of factors that influence risk perceptions (Aven and Kristensen, 2005; Douglas, 1999; Metzner-Szigeth, 2009; Sjöberg, 2000a; Slovic, 2000a). Used together, this established, yet very contentious, body of work reveals that risk perceptions and acceptability are shaped by the contextualised interplay of the measured probability of events, past experiences of similar events and expected time-frames for future events, personal attributes, and the social context within which people live (Bird et al., 2010; Douglas, 1999; Greene, 2003; Hansson, 2010; Kasperson et al., 2003; Roeser, 2010; Sjöberg, 2007; Sjöberg, 2000b; Slovic, 2000a; Slovic, 2000b; Thomalla and Schmuck, 2004).

Specific personal characteristics influencing risk perception and judgements include attitudes and emotional sensitivity towards all or particular hazards ranging from optimism through to indifference and extreme angst of possible associated hazard outcomes, levels of hazard controllability, beliefs, values, gender, knowledge and expectations, direct and indirect experiences, and trust levels in reporting authorities (Aven and Kristensen, 2005; Bird et al., 2010; Douglas, 1999; Kasperson et al., 2003; Paul et al., 2009; Roeser, 2010; Sjöberg, 2007; Sjöberg, 2000b; Sjöberg, 2000a; Slovic, 2000a; Slovic, 2000b; Thomalla and Schmuck, 2004). Contextualised influences comprise evolutionary ideologies and cultural belief systems, cultural biases, worldviews, and social norms (all of which inform intuitive „gut‟ reactions and moral assumptions), along with dominant social value systems (economic gain and patriarchy being two examples),) and institutional biases derived from dominant beliefs (Douglas, 1999; Greene, 2003; Kasperson et al., 2003; Paul et al., 2009; Slovic, 2000a; Slovic, 2000b). For example, Thomalla (2008), in his assessment of the effectiveness of Indonesia‟s Early Warning System (EWS),) reveals the important role contextualised world views such as fatalism (derived from religious beliefs) plays in determining risk perception

and resultant inaction. Adger (2006: 276) explains that:

> While policy-makers always express surprise at events, many of these are predictable or at least „imaginable". Yet vulnerability persists, due both to inherent unpredictability in some physical systems, but also because of ideological blocks to perceiving certain risks.

These inherent blockages can therefore prevent action and social transformation at the individual and collective level of social organisation.

Kasperson *et al.* (2003) add that risk perception can also be amplified or attenuated through the simultaneous dissemination and interpretation of that risk by multiple social channels, including individuals, social groups, the media, and institutions (public and private). The „Social Amplification of Risk Framework", (SARF) presented by Kasperson *et al.* (1988) also explains how the secondary consequences of social processes, or „ripple" effects, can extend or constrain the temporal, sectoral, and geographical scales of risk impacts, including managing risk reduction action or inaction (Kasperson et al., 2003). The amplification and attenuation of risk perception through media reports and governmental responses proves to be resoundingly true in the context of tourism (see Sections 2.4.1, 6.2.3, 6.4.2, and 7.3.1.4). In light of the multiple factors that influence risk perception and action, there is no guarantee that knowledge and acceptance of risk will spur risk-reduction actions. Human agency, along with the way people interpret that knowledge in the context of experiences, beliefs, and future expectations that evolve within a socio-economic and political context, greatly affects action and inaction (Bird et al., 2010; Fischhoff et al., 2000; Johnston et al., 2005; Paton, 2007; Rippl, 2002). Furthermore, when assessing risk and appropriate actions, the size of the possible event and its estimated likelihood does influence chosen action (Ord et al., 2010). Larger hazards, particularly those with low probabilities and higher consequences, are often underestimated, whilst the probability of smaller hazards are overestimated (Sjöberg, 2007). Understanding these multiple narratives that underlie the contested choices and scaled actions of government, industry, and civil society, enables the identification of both causes of vulnerability and alternate trajectories, and affords opportunities for action, change, and transformation (Leach, 2008).

Discussions about vulnerability, however, cannot take place without reference to resilience. Resilience refers to the capacity of a system to absorb disturbance and reorganise throughout periods of change whilst retaining function, structure, and identity (Folke, 2006; Walker et al., 2004). The concept closely mirrors vulnerability and shares the same elements; namely the shocks and stressors experienced by the social-ecological system, and the response of and the capacity for the system to cope, reorganise, and adapt without losing

function (Adger, 2006; Cannon, 2008; Moberg, 2008). But resilience is more than the flip-side (see IPCC, 2001b) or the absence of vulnerability (Buckle et al., 2000). Vulnerability and resilience are co-constituted and co-exist in the same households, communities, environments, and economies, all of which are in a constant state of flux (Rigg et al., 2008; Scheyvens and Momsen, 2008). Nor is vulnerability or resilience uniform within populations (Fulu, 2007). A household or community is simultaneously vulnerable and resilient, with the degree of each depending upon the type of shock or stress experienced at a given time, and the resources and positive qualities they have at their disposal (pre-and post-event) to counter their vulnerability to that particular shock (Cannon, 2008). One cannot be privileged over the other. Yet despite the close relationship between the two terms, their theoretical conceptualisations and histories are very different, a point that is fully explored in Chapter 3.

2.4   Understanding destination vulnerability

The last decade has seen the emergence of strong research interest in the vulnerability of tourism destinations, much of which derives from two broad areas of research: (i) disasters and crisis management and (ii) climate change. This body of research adds to our understanding of destination vulnerability by helping identify the factors that contribute to destination vulnerability, and proffering a number of vulnerability reduction strategies.

2.4.1   Challenges in responding to crises and disasters

Research interest in tourism and its vulnerability to shocks and stressors is problem-orientated and dates back to the 1980s (de Sausmarez, 2007). Richter and Waugh‟s (1986) critical enquiry into tourism‟s vulnerability to shocks was spurred by the detrimental impact terrorist attacks at several European airports and subsequent American raids on Libya had on tourist flows in the 1980s. The symbiotic relationship they found between terrorism and tourism prompted calls for: (i) an appreciation of the reasons why tourism is vulnerable to terrorism and political unrest, and (ii) the need for policy makers and industry stakeholders to take actions to reduce the vulnerability of the travel industry and the tourists (Richter and Waugh, 1986). These two action points formed the basis of further enquiry into tourism‟s vulnerability to terrorism, political unrest, health epidemics, and disasters (including both man-made and biophysical events) and the management of vulnerability.

Richter and Waugh‟s (1986) seminal work along with subsequent research on terrorism, political unrest, health epidemics, natural hazards, and disasters (including the 2004 tsunami) identifies nine main factors that create destination vulnerability to shock. These are listed below with reference to subsequent studies that document such factors:

1. the place-specific nature of tourist activity (Calgaro and Lloyd, 2008; Cioccio and Michael, 2007; Richter and Waugh, 1986; Robinson and Jarvie, 2008; Sönmez et al., 1999);

2. the positioning of tourism development in ecologically sensitive and hazard-prone areas (Birkland et al., 2006b; Calgaro and Lloyd, 2008; Cioccio and Michael, 2007; Cohen, 2007; Faulkner, 2001; Murphy and Bayley, 1989; Ritchie, 2008);

3. the sensitivity of destination images and consequent tourist flows to both real and perceived risks in the highly competitive international tourism market (Baker and Coulter, 2007; Birkland et al., 2006b; Cohen, 2008; Faulkner, 2001; Handmer et al., 2007; Huan et al., 2004; Ichinosawa, 2006; Kelman et al., 2008; Mansfeld, 1999; Richter and Waugh, 1986; Robinson and Jarvie, 2008; Sönmez, 1998; Sönmez and Graefe, 1998; Tarlow, 2009; Yüksel and Yüksel, 2007; Zeng et al., 2005);

4. a lack of knowledge or interest in hazard risks among destination host communities, tourism businesses, and tourists (Calgaro and Lloyd, 2008; Cioccio and Michael, 2007; Cohen, 2007; Murphy and Bayley, 1989; Ritchie, 2008);

5. limited business and industry disaster preparedness based, in part, on an unrealistic optimism about the vulnerability of tourism activity to risks (Cassedy, 1991; Cioccio and Michael, 2007; Drabek, 1992; Drabek, 1995; Faulkner, 2001; Morgan and Fluker, 2003; Prideaux et al., 2003);

6. a high dependency on tourism as a primary livelihood source (Baker and Coulter, 2007; Calgaro and Lloyd, 2008; Carlsen and Hughes, 2008; Handmer et al., 2007; Ritchie, 2004; Robinson and Jarvie, 2008; Sharpley, 2005);

7. limited access and uneven entitlements to financial (insurance plus liquid and fixed assets) and social resources (welfare support services, family assistance, NGO support) (Calgaro and Lloyd, 2008; Handmer et al., 2007; Ichinosawa, 2006; Smith and Henderson, 2008);

8. a heavy reliance on the marketing strategies of international tour operators (Calgaro and Lloyd, 2008; Ichinosawa, 2006; Knox and Marston, 2004); and

9. high levels of product seasonality (Calgaro and Lloyd, 2008; Méheux and Parker, 2006).

According to Richter and Waugh (1986), if there is strife or trouble in one area, tourists simply choose alternate destinations. This obvious but powerful observation identifies the most disempowering characteristic of tourism destination activity. Tourism consumption is flexible but the production and delivery of the tourist product by destination communities is

not. The tourism experience sold to the consumer is fundamentally place-based but the production of the product, encapsulated in a destination's projected image, involves constant interaction between multitudes of businesses and services (transport, accommodation, guides, marketing and selling to name a few) working at multiple scales that often span the globe (Dredge and Jenkins, 2003; Urry, 1990; Urry, 1995). While the option of diverting business to alternate destinations within the same country or to alternate regions deemed as „safer" may be available to international tour operators with many destination packages to offer, and to national governments interested in retaining projected levels of GDP, this is not a luxury that tourism-dependent communities can afford. They cannot easily transport their investment, be it large or small, which in turn leaves them vulnerable to shocks that often lie outside their control. This place-based characteristic of tourism brings it squarely into the realm of geographical enquiry.

The immense impacts of disastrous events, political instability, and disease outbreaks, upon tourism flows to destinations is directly related to the actual or perceived risk of safety and security attributed to such events, irrespective of whether the threat emanates from the destination itself or another part of the world (Ritchie, 2008; Sönmez et al., 1999). People will not travel if they feel unsafe or associate negative images (often amplified and distorted by the media) with a particular destination (Cassedy, 1991; Gurtner, 2004; Scott et al., 2008; Sönmez et al., 1999; Young and Montgomery, 1998). This powerful perception of risk rocks the very foundations upon which the tourism product stands – image.

The tourism industry offers its clients a carefully constructed experience, embodying perceptions and images that reflect the perceived needs and desires of its clients (Young, 1999). Yet the fragility of a destination's carefully constructed image leaves it vulnerable to shocks and stressors (Carlsen and Hughes, 2008; Chacko and Marcell, 2008; Ritchie et al., 2004; Ritchie, 2008). The destruction of a destination's image and reputation following a disastrous event is attributable to two events: the event itself, and the ensuing negative and often misleading publicity that continues in the wake of the disaster, often persisting until pre-disaster conditions resume (Cassedy, 1991; Cioccio and Michael, 2007; Ichinosawa, 2006; Sönmez et al., 1999). Once the destination image is tarnished by negative perceptions, it can be difficult for that destination to regain its competitive edge in the highly competitive global tourism market (Carlsen and Hughes, 2008; Gurtner, 2004; Knox and Marston, 2004). Yet this only tells one half of the story. Disasters and negativity can indeed stimulate growth once the initial shock has passed. Price slashing by tarnished destination operators can attract bargain hunters (see Gross, 2010; Weich, 2003) whilst heightened curiosity in the disaster

and its legacy has the propensity to open up new markets and stimulate longer-term growth (see Section 6.2.3).

The fragility of destination images to negative perceptions is often further exacerbated by high levels of dependency on tourism as a livelihood source, and a heavy reliance on foreign controlled marketing strategies (Baker and Coulter, 2007; Ichinosawa, 2006). Destinations reliant on highly seasonal tourism flows face greater challenges; annual business revenue can easily be disrupted by shocks that occur prior to or during peak periods, causing simultaneous losses for household, community, regional, and national actors. Losses further diminish investment confidence, lower rates of job creation, slow economic growth, and reduced gross domestic product (GDP) (Sönmez et al., 1999; Gurtner, 2004). These are common characteristics of tourism activity in many developing country destinations, including those affected by the 2004 tsunami. Thailand, Sri Lanka, India"s Nicobar and Andaman Islands, and the Maldives, for example, rely heavily on tourism as a source of income and financial exchange. The growing popularity of using tourism as an economic development strategy in resource-scarce regions will likely see this vulnerability increase (Baker and Coulter, 2007; Méheux and Parker, 2006).

In response to these challenges, three strategies are proposed in the literature to reduce destination vulnerability:

1. gain a deeper understanding of the reasons why tourism is especially vulnerable to shocks and stressors, and address those factors that cause and perpetuate destination vulnerability (Richter and Waugh, 1986; Ritchie, 2008; Sönmez and Graefe, 1998);

2. modify loss burdens through insurance schemes and the diversification of markets, products, and livelihood portfolios (including the development of alternate livelihoods), to spread risks and create safety nets for households to fall back on when tourist flows (particularly from main markets) are interrupted by external shocks (Anderson and Prideaux, 2003; Baker and Coulter, 2007; Ladkin et al., 2008; Ritchie, 2008; Robinson and Jarvie, 2008; Zeng et al., 2005); and

3. adopt a proactive approach to uncertainty and risk by incorporating risk assessments and crisis management strategies (including pre- and post-disaster marketing strategies, and the introduction of environmental control engineering where appropriate) into tourism development plans to decrease exposure levels and increase preparedness to potential current and future events (Beirman, 2003; Carlsen and Hughes, 2008; Carlsen and Liburd, 2008; Cassedy, 1991; Cioccio and Michael,

2007; Faulkner, 2001; Faulkner and Vikulov, 2001; Gurtner, 2004; Gurtner, 2006; Ladkin et al., 2008; Paraskevas and Arendell, 2007; Pforr and Hosie, 2007; Richter and Waugh, 1986; Ritchie, 2004; Ritchie, 2008; Robinson and Jarvie, 2008; Scott et al., 2008; Tarlow, 2009; Volo, 2008; Yu-Chin et al., 2007).

Crisis management and preparedness strategies detailed here cover different aspects of the disaster cycle from pre-event prevention and preparation through to emergency responses, long-term recovery, and strategy evaluation and adjustments (Faulkner, 2001; Ritchie, 2004; Volo, 2008). Faulkner"s (2001) well-regarded Tourism Disaster Management Framework, along with Scott *et al.*"s (2008) additions to the same framework, outline the types of actions that are needed at each of the aforementioned stages to help destinations better prepare and respond to disasters over time. Included in the pre-event preparation are risk assessments and community and visitor coping capacity assessments. The coping capacity assessments are designed to determine the destinations" demographic characteristics, as well as the socio-economic, political, cultural, and organisational resources immediately available to aid their response and recovery. The strategies are solid ideas but there is little reference to the political economy of resource distribution, the role human agency and cultural norms have on resource use choices, and the impacts the outcomes of those choices have on exposure and sensitivity levels to future shocks. The findings from the comparative DVA presented in Chapters 5 to 7 prove that these may not be viable options in all contexts, nor wanted once options are weighed up against actor agendas, preferences, structural constraints, and possible trade-offs.

2.4.2 *Insights into destination vulnerability from climate change research*

Climate change presents new challenges to tourism researchers and destination communities already accustomed to uncertainties. Climate is an integral part of nature-based tourism (Mooney and Miller, 2009). It can either attract or repel tourists (Gomez Martin 2005), and it determines the types of recreational options available in a destination and the seasonality of those experiences (Gómez Martín, 2005; Nyaupane and Chhetri, 2009; Scott et al., 2007).

Destinations at particular risk from climate change impacts include mountain-based and coastal destinations (IPCC, 2007; UNWTO, 2007). Mountain-based destinations are faced with (i) changing skiing conditions and season lengths (Breiling et al., 1997; Elsasser and Bürki, 2002; Scott et al., 2006a; Galloway, 1998);, (ii) glacier retreat, avalanches, landslides,flooding, habitat fragmentation, and loss of biodiversity through fire and insect

infestations shifts (Nyaupane and Chhetri, 2009; Scott and Suffling, 2000);, and (iii) increases in fire storms (Cioccio and Michael, 2007; Franke, 2000). Coastal destinations face different risks but the impacts are no less detrimental to tourist flows and tourism livelihoods. Coastal tourism destination communities are highly susceptible to sea-level rise, and extreme events such as hurricanes, storms, and floods, along with the secondary effects of both. These secondary effects include coastal erosion, coral bleaching, and the degradation of biophysical protection systems like seagrass beds and mangroves, all of which threaten and degrade tourism infrastructure and investment, and reduce the value of these destinations for tourism (IPCC, 2007; Phillips and Jones, 2006). Recent events like the 2004 tsunami, Hurricane Katrina in 2005, the 2009 Samoan earthquake and tsunami, and sea-level rise induced evacuations from the low-lying Polynesian island of Tuvalu, serve as poignant reminders of the types of risks and consequences coastal destinations may face in the future.

A growing awareness of the detrimental impacts of climate change on tourism has prompted calls to address the need to identify and assess the potential impacts of climate change to help tourism stakeholders anticipate, plan for, and adapt to future changes (Mooney and Miller, 2009; Tervo, 2008). So far much of the work on climate change focuses on:

1. raising awareness of both the potential impacts of climate change on tourism operations in various locations, and the impacts tourism has on climate change (Agnew and Viner, 2001; Amelung and Viner, 2007; Becken, 2007; Casimiro and Calheiros, 2007; Corobov, 2007; Gössling, 2002; Harrison et al., 1999; Patterson et al., 2006; Peeters and Dings, 2007; Perry, 2000; Nyaupane and Chhetri, 2009);

2. improving our understanding of the possible economic impacts of climate change on the industry (Berrittella et al., 2006; Butler and Jones, 2001; Gössling and Hall, 2006b; Scott et al., 2006a);

3. modelling future climate conditions (Amelung and Viner, 2007; Fukushima et al., 2002; Scott et al., 2006a);

4. exploring the influences of climate change on consumers" choice of destination and subsequent demand (Becken, 2007; Berrittella et al., 2006; Buultjens et al., 2007; Dwyer and Forsyth, 2008; Hamilton, 2007; Mansfeld et al., 2007); and

5. offering management and adaptive strategies to further the viability of destinations and host communities affected by climate change (El-Raey, 1997; Elsasser and Bürki, 2002; Fukushima et al., 2002; Koenig and Abegg, 1997; Mooney and Miller, 2009; Scott et al., 2003; Scott et al., 2006a; Tervo, 2008). Strategies include: snowmaking, marketing campaigns, product development and diversification,

adaptive capacity building strategies, and the relocation of operations (El-Raey, 1997; Amelung and Viner, 2007; Fukushima et al., 2002; Phillips and Jones, 2006; Scott et al., 2003; Scott et al., 2006a; Tervo, 2008).

Identifying and addressing the causal factors of vulnerability is recognised as a key component of the adaptation process (see Smit and Wandel, 2006). Consequently, numerous vulnerability assessments of climate-sensitive destinations have been undertaken to fulfil this need (Alpar, 2008; El-Raey, 1997; Nepal and Chipeniuk, 2005; Nyaupane and Chhetri, 2009; Scott et al., 2006a; and Tervo, 2008 are some examples).

The climate change research identifies seven factors that contribute to destination vulnerability, the first four of which concur with those identified in crisis management and disasters research:

1. the place-specific nature of tourist activity (Wall, 2007b);
2. ecological fragility (Gössling and Hall, 2006a; Jodha, 2001; Mooney and Miller, 2009; Nepal and Chipeniuk, 2005; Nyaupane and Chhetri, 2009; Simpson, 2007);
3. livelihood dependency on tourism often due to restricted options (Fukushima et al., 2002; Jodha, 2001; Moreno and Becken, 2009; Nepal and Chipeniuk, 2005; Nyaupane and Chhetri, 2009; Wall, 2007a; Tervo, 2008);
4. seasonality levels (Amelung et al., 2005; Casimiro and Calheiros, 2007; Elsasser and Bürki, 2002; Fukushima et al., 2002; Harrison et al., 1999; Koenig and Abegg, 1997; Nyaupane and Chhetri, 2009; Wall, 2007a; Scott and Suffling, 2000; Scott et al., 2003; Scott et al., 2006a);
5. destination remoteness and inaccessibility (Jodha, 2001; Nepal and Chipeniuk, 2005; Nyaupane and Chhetri, 2009);
6. travel motivations and consumer choices (Becken, 2007; Hamilton, 2007; Mansfeld et al., 2007); and
7. institutional flexibility (Wall, 2007a).

2.4.3 *An unfinished picture of destination vulnerability*

The orientation of current crisis management and climate change research is commendable and necessary, given the need to identify risks where possible and design well-structured and place-specific pre-emptive plans and adaptive strategies to better cope and respond to disturbance and change. Together this body of work forms a kaleidoscope of information, pieces that help form a picture of what conditions create and perpetuate destination vulnerability. A summary of those factors and processes that contribute to destination

vulnerability identified in the crisis management and climate change literature is presented in Figure 2.1. However, preparedness and adaptation strategies and logistical support for them (including education and training) only fortify some components of the social-ecological system. Crisis management strategies that centre on proactive and precautionary planning may actually reinforce the use of conventional, yet unsuitable, responses rather than stimulate positive system adjustments and adaptation (see Roman, 2010; Zahra and Ryan, 2007).

When looking at dynamic social-ecological systems, the whole is more than the sum of its parts; parts cannot be discussed independently as they are constantly changing in response to innovations and developments taking place elsewhere in the system (Clark and Dickson, 2003; Faulkner and Russell, 1997; Norgaard, 1995). However, very little progress has been made in the last 20 years on how to systematically reduce vulnerability in the context of the wider social-ecological system, of which tourism destinations and systems are a part. To date, there are few holistic destination vulnerability assessments of the socio-ecological system that comprehensively identify the contextualised factors and dynamic interactive processes that create and perpetuate destination vulnerability over time and space (Calgaro, 2005; Calgaro and Lloyd, 2008).

The onus of climate change assessments remains focusssed on the identification of factors that heighten physical exposure to predicted climate change impacts, and consequent tourism operational interruptions. Few climate change studies in relation to tourism concurrently assess the exposure, sensitivity, and adaptive capacity of destination populations, and adaptation options beyond product diversification and snowmaking. There are, however, three exceptions. Nyaupane and Chhetri (2009) and Tervo (2008) analyse the destination vulnerability of the mountain-based destinations of the Himalayas and Finland (respectively) to climate change impacts. However, they consciously choose not to assess the contextual differences - differing social, political, and economic conditions - between destinations and the activities that produce variances in vulnerability, yet concede the need for its future inclusion (Nyaupane and Chhetri, 2009; Tervo, 2008). Roman (2010) on the other hand, focuses on those very contextualised factors that not only influence existing vulnerability levels in the Alpine Shire in Victoria, Australia to climate changes, but also those that pose and possible barriers to effective adaptation.

Key: Factors identified in the crisis management & disasters literature
Factors identified in the climate change literature
Common factors found in both sets of literature
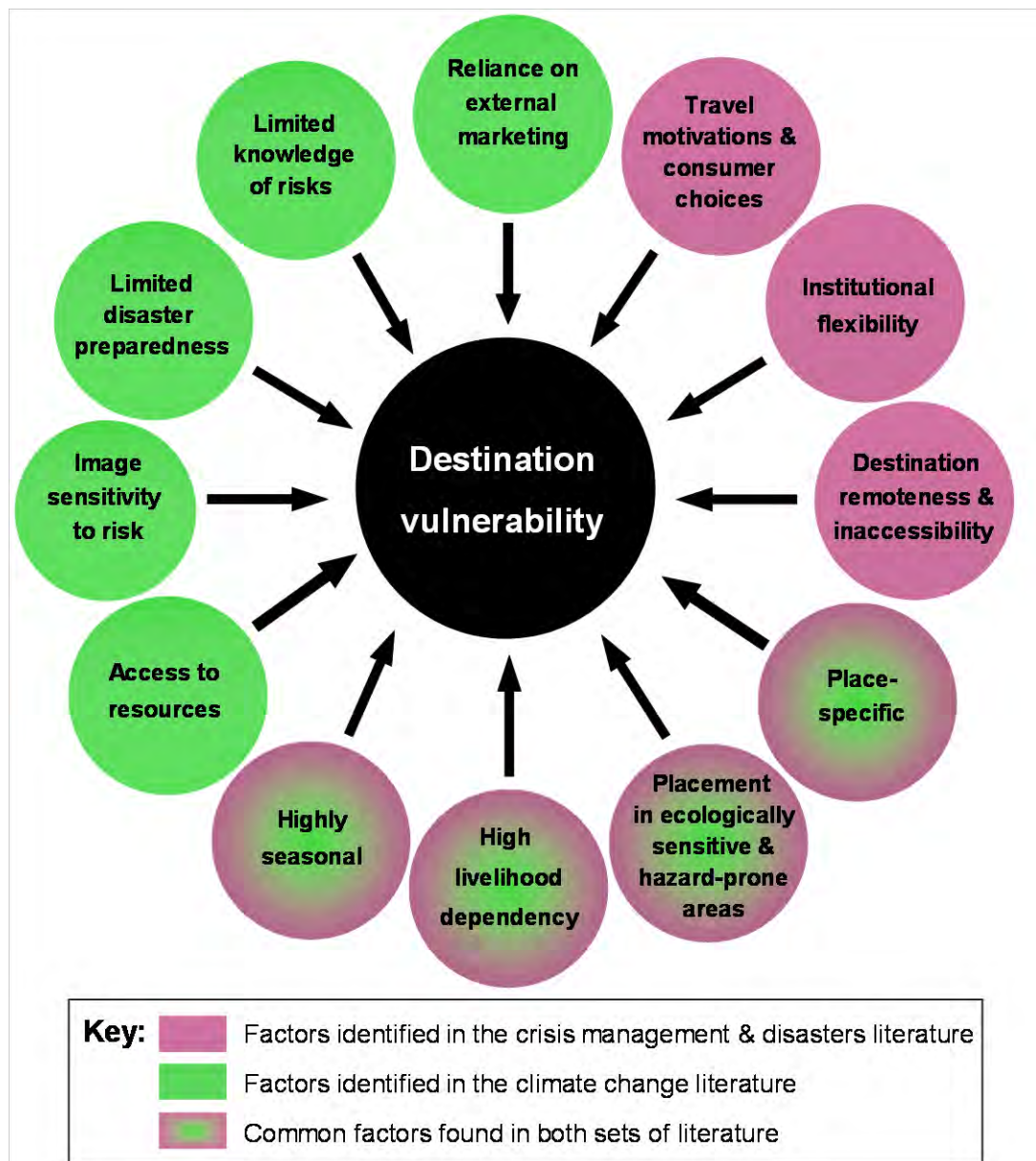
Figure 2.1: A summary of identified factors that increase destination vulnerability

Concentrating on selected aspects of the coupled social-ecological system provides important in-depth knowledge on that aspect, but fails to capture the complexities of context. This includes the role that structure (power systems and distribution, coordination, economy, and decision-making processes), culture (norms, dominant traditions and ideologies, and value systems), and human agency, has on risk perceptions, chosen development pathways, the use of finite resources (based on weighted trade-offs), response choices to multiple

shocks, and strategy outcomes (see Okumus, 2003). By doing so, larger contextualised and influencing factors escape attention, and vulnerability continues.

Much of the crisis management and disasters literature is prescriptive in nature, describing strategies and techniques for assessing and managing risk and preventing crises, and outlining the immediate, short-term effects on tourism destinations (Carlsen and Liburd, 2008; Ritchie, 2008). Furthermore, destination vulnerability assessments often concentrate on one or two aspects of the tourism system (marketing, disaster responses and improved preparedness, and perceptions of risk and uncertainty, are a few examples). This trend is evident in the plethora of assessments that focus on the 2004 tsunami. Aspects singled out for analysis include risk and market responses (Carlsen and Hughes, 2008; Ichinosawa, 2006; Kelman et al., 2008; Rittichainuwat, 2008), corporate social responsibility (Henderson, 2007a), geographies and politics of aid distribution (Coate et al., 2006; Rigg et al., 2005; Tan-Mullins et al., 2007) and population subgroups including response capacities of the informal tourism sector (Handmer et al., 2007; Smith and Henderson, 2008). More inclusive assessments are offered by Bird *et al.* (2007), Birkland et al. (2006b), Cohen (2007) and Robinson and Jarvie (2008). Rigg *et al.* (2008) present the only study that delves deeper into the contextualised richness of the 2004 tsunami disaster and the recovery, to explore the role that structure (embedded in the local and national political economy) and agency (reflected in serendipity and contingency) played in shaping patterns of recovery of the Thai destinations of Khao Lak and Phi Phi, and where it hampered their recovery. But they too fail to consider the highly contextualised mix of factors and processes that determine exposure, sensitivity, and system adaptiveness in destinations.

These short-comings found in destination vulnerability assessments to date are mirrored in the expansive body of vulnerability research (see Larsen et al., 2009; Zou and Thomalla, 2008). Vulnerability assessments remain skewed toward analysing physical exposure levels, despite strong evidence stating that human, social, and institutional characteristics are the main determinants of vulnerability (Larsen et al., 2009; Zou and Thomalla, 2008). Human action (or inaction) can precipitate and perpetuate exposure and sensitivity to risk and uncertainty, and impede the success of response and recovery strategies (Carlsen and Liburd, 2008; Cunliffe, 2006; Tarlow, 2009). Consequently, a great deal of vital understanding of contextual patterns of vulnerability, within places and across geographical sites, sectors, and scales, is missing, and the root causes (including unequal access and entitlement to resources, social structures, and power systems) are overlooked and are left unaddressed (Carlsen and Liburd, 2008; Larsen et al., 2009; Zou and Thomalla, 2008).

There are two other short-comings in the larger body of vulnerability research. First, many vulnerability assessments lack applied theoretical rigour (Zou and Thomalla, 2008). This is surprising given that vulnerability science is highly reflexive, where much is learnt from experience (Beck, 1999; Cutter, 2003). Theoretical frameworks are often presented in the introduction of assessments but little reference or comparison is made to them in the analysis of empirical case studies (Zou and Thomalla, 2008). Zou and Thomalla reason that:

> Since the purpose of undertaking a case study is to obtain a detailed understanding of the factors contributing to the vulnerability of local individuals, households or communities, in order to identify potential entry points for policy intervention, the use of a conceptual framework is important to help to identify all possible factors contributing to vulnerability and to map the interactions between them. There are very few links in the literature between theoretical thinking and the context-specific richness of experience and knowledge derived from local case studies (2008: 77-78).

Research on destination vulnerability specifically has a more fundamental problem. There are few rigorous frameworks and theoretical parameters for guiding the assessment of destination vulnerability and resilience to shocks and stressors (Calgaro and Lloyd, 2008; Carlsen and Liburd, 2008; Faulkner, 2001; Moreno and Becken, 2009), a limitation that is discussed and redressed in Chapter 3.

The second widespread problem is a shortage of longitudinal vulnerability assessments that monitor the creation and perpetuation of vulnerability over time (Larsen et al., 2009; Oliver-Smith, 1996). Measuring and monitoring vulnerability over time is a crucial task if science is to help support the transition to a more sustainable world (Birkmann, 2006; Kasperson et al., 2005). The past alone provides only partial insights on the present and future conditions (Rigg et al., 2008: 150). Accordingly, there is little knowledge about the outcomes and consequences of post-event recovery actions, inaction, and the success and failures of post-event coping and adaptation responses. Rhetoric about reducing vulnerability and increasing adaptation and resilience is not enough – only the monitoring and evaluation of actions, why they are taken (or not), and the longer-term consequences of these actions will reveal the true nature of the system and its propensity to adapt and change. Desired change is not a given in the social-ecological system; it requires capacity, political will, and a continuous commitment to monitor, evaluate, and adjust.

Despite the need for longer-term assessments and support in building capacity and resilience, this can be problematic to achieve practically. First, the competitive rather than cooperative nature of aid assistance can heighten vulnerability levels instead of curtailing

them (La Trobe and Venton, 2003; Larsen et al., 2009). Second, external institutions have limited funds to support and monitor long-term changes (Rice, 2005; La Trobe and Venton, 2003). Third, localised institutions may be limited by restricted budgets and human capacity to undertake this transformative role alone at the required scale (Mileti, 1999; Miller et al., 2005). Finally, there is the dilemma between balancing the opportunities for reform and the realism of speed in post disaster planning (Davis, 2006; Handmer et al., 2007). There is now a pressing need to move beyond descriptive accounts of climate change impacts and reactive disaster responses, to critically assess and address those contextualised factors and pre-conditions that increase destination vulnerability levels prior to an event (or series of events), and the consequences of response and adaptation mechanisms (feedback mechanisms) on future exposure and sensitivity levels   (Calgaro and Lloyd, 2008; Carlsen and Liburd, 2008; Kelman et al., 2008; Ritchie, 2008). A complete contextualised picture can only come from applying holistic theoretical approaches that incorporate all the causal factors, processes, and interactions between the two that together contribute to destination vulnerability and resilience over space and time (see Ritchie, 2008). This thesis addresses each of these gaps by designing a destination vulnerability framework and applying it to assess the vulnerability of the heavily affected Thai destinations of Khao Lak, Phi Phi Don and Patong, over a period of four years.

2.5   Conclusion

The vulnerability of tourism destinations to an array of shocks and stressors has long been recognised by tourism researchers and industry stakeholders. Coping with political unrest, economic downturns, health epidemics, and environmental degradation caused by overdevelopment is an ever present concern for tourist destinations that are heavily dependant on demand for a non-essential product – an experience – that is sold to the travelling public. A growing concern about the severity and impact of natural hazards, like the 2004 Indian Ocean tsunami and global environmental change, on tourism destinations only adds another dimension to the increasing debate in tourism academic and policy circles over suitable solutions to deal with the multiple shocks and stressors that affect tourist flows to tourism destinations. This chapter shows that our knowledge of the causal factors and processes that underlie destination vulnerability is growing, as is interest in addressing this problem. The tourism literature on crisis management and climate change identifies 12 factors summarised in Figure 2.1 that contribute to destination vulnerability. But the identification of factors is not enough to decrease vulnerability. The long evolution of vulnerability research and its mixed success in redressing vulnerability clearly demonstrates this.

The systems approach to vulnerability research adopted in this thesis depicts vulnerability as a contextual characteristic of the social-ecological system, and recognises that its manifestation in a given place is shaped by (i) the physical exposure of a population to shocks and stressors, (ii) its sensitivity to those events, and (iii) its capacity to cope and adjust to multiple and often compounding events that occur over time and space. Vulnerability causal factors and processes interacting in a given place cannot be successfully addressed without fully engaging in the social-ecological context within which change, and vulnerability and resilience to these changes, occur. What is missing from tourism research are comprehensive and holistic assessments of destination vulnerability, that explore all the factors and processes that heighten vulnerability, and how the interactions of these affect vulnerability and resilience levels within the contextualised living system. A review of the greater body of vulnerability literature also reveals two other short-comings. First, most vulnerability assessments lack applied theoretical rigor. Research into destination vulnerability in particular faces a more fundamental problem; there are no robust frameworks for assessing destination vulnerability. Second, there is a shortage of longitudinal assessments that monitor vulnerability and resilience over time, which precludes insights into the outcomes and consequences of post-event actions or non-action. In this thesis I address these short-comings, the most pressing of which is to design a theoretical framework for assessing destination vulnerability to facilitate comprehensive destination vulnerability assessments. The next chapter is dedicated to fulfilling this research need and PhD aim.

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3   The Destination Sustainability Framework

3.1   Introduction

The identification of all the causal factors and processes that create and perpetuate destination vulnerability and those that build resilience, as outlined in Chapter 2, requires a robust theoretical framework. This chapter focuses solely on the design of a theoretical framework to advance our understanding and conceptualisation of destination vulnerability, and to facilitate its assessment. The development of a suitable framework for assessing destination vulnerability begins with a review of current tourism approaches to sustainability that ends with a case for adopting holistic approaches in furthering the sustainability of tourism destinations. The next step in the theory building process involves an exploration and critique of three systems approaches – chaos-complexity theory, resilience thinking, and vulnerability approaches – and their usefulness in better understanding tourism destinations and their vulnerability and resilience to change. Each approach adds theoretical insights into those factors and processes that create and perpetuate destination vulnerability over time and space, but prove inadequate on their own. Accordingly, the remainder of the chapter is dedicated to the presentation of a new and innovative theoretical framework – the Destination Sustainability Framework – that incorporates complementary theories and ideas from vulnerability research, resilience thinking, sustainability science, tourism approaches, and the geographical theories of place, relational scale, and time. However, since knowledge and theory creation is coloured by a researcher‟s ontological and ideological positioning, I begin the chapter by taking a step back from theory to outline my positionality and its impact upon my ensuing theoretical choices.

3.2   Through the looking glass: knowledge, ontology and theory

Seale (1999), Dobson (2001) and Dean *et al* (2005) assert that knowledge is always mediated by a researcher‟s positionality, pre-existing ideas, and values - whether this is acknowledged by the researcher or not - which then inextricably binds research and knowledge generation with theory and philosophy. For Guba and Lincoln (1994), theories are themselves value statements that are informed by beliefs of what exists in and what can be known about the world. Positionality and challenges to universality have gained much credence in human geography, particularly through advances in feminist theory and post-

colonialism (see Hall, 1992; Hartsock, 1987; Jackson, 2006). Accepting the important role positionality and ontology play in knowledge generation, discussions on and justifications for my theoretical choices pertaining to the exploration of destination vulnerability cannot take place without reference to my own philosophical leanings.

I align myself most closely with the philosophy of critical realism, particularly those ideas espoused by the British philosopher Roy Bhaskar. The core principles of critical realism originally proposed by Bhaskar purport that knowledge of *what is* or *what exists* is grounded in the tangible (intransitive) world, existing independently of human theories of its existence (Dean et al., 2005; Phillips, 2005). Having said that, Bhaskar acknowledges that human experiences, perceptions, and understanding of *what exists* (the transitive) is situated (culturally and historically) and contextualised in a particular place and time, enabling multiple realities to coexist (Dean et al., 2005; Phillips, 2005). Given that the social world comprises a pre-interpreted reality, the world from a critical realist perspective cannot be reduced solely to the ideas that people have about it (Jessop, 2005). Critical realism's equal and unprivileged concentration on both external realities and human interpretations of the tangible world lends itself well to geographical enquiry, as it links both the human and physical environment and answering problem-orientated queries (Phillips, 2005), like those that revolve around the social-ecological system, vulnerability, resilience building, and change. Critical realism also sees knowledge as being fallible and susceptible to being superseded in the future because it is spatially and temporally specific (Dean et al., 2005; Steinmetz 1998; Wai-chung Yeung, 1997). For Bhaskar, "All beliefs are socially produced, so that knowledge is transient" (1979: 73). Reflexivity by the social scientist is also encouraged: the codetermination of social structure by social knowledge makes reflexivity obligatory in the social sciences (Jessop, 2005; Steinmetz 1998). Critical realism as a philosophy, therefore, advocates ontological realism and epistemological relativism (Dean et al., 2005; Jessop, 2005; Steinmetz 1998).

From a critical realist perspective, the goal of social theory is to identify the underlying generative structures and multiple causal mechanisms (factors) that exist in reality (encompassed in the social-ecological system), and to explain how these combine to produce actual social events and phenomena in a given space and time (Jessop, 2005; Reed and Harvey, 1992; Steinmetz 1998). Bhaskar asks what the world itself must be like in order for conflict, change, and transformation to be possible (Dean et al., 2005). *Reality* (the focus of critical realism) and change within it is shaped by relational interactions between: (i) the *real* which includes structures and mechanisms which generate events, (ii) the *actual* that

includes events which generate particular experiences, and (iii) the *empirical* consisting of people"s sensed experiences (Bhaskar, 1986; Jessop, 2005; Phillips, 2005). For critical realists, contingency shapes the very nature of open social systems (Steinmetz 1998). Contingency here means that complex events or phenomena are codetermined by constellations of causal factors, but that these causal constellations are space and time specific (Steinmetz 1998). This means that a similar event or outcome may be produced by a different combination of factors (mechanisms) in another setting, which renders precise prediction impossible in the social sciences due to ever-changing contexts (Ragin, 1987; Steinmetz 1998).

Critical realist thinking asserts that social change and transformation (a key concern for contemporary vulnerability and resilience research) is produced through a continuous dialectic between social structures and human agency, resulting in recursive conditioning and the complex co-evolution of both (Jessop, 2005). In critical realism, social forms (including social structures, social conventions and processes, institutions, laws, and regulations) are a necessary condition for any intentional act (Bhaskar, 1986; Jessop, 2005). Yet it is human agency - intentional activity (be it active or passive) by human beings driven by personal agendas and cultural norms - that actualise these causal powers and processes, but do so in relation and reaction to existing social structures and practices (Jessop, 2005). Social activity then is the reflexive articulation of the constraining/enabling power of structures and the reproductive/transformative power of agency that plays out over time and space (Jessop, 2005).

Critical realism is able to accommodate many theoretical approaches about an experienced phenomenon, provided that they share its commitments to being both critical and accepting of an external reality that is independent of, yet accessible, to our knowledge of it (Coole, 2005: 121). The only major constraint on theory building is the world itself. This philosophy takes the view that although we perceive the world from a particular viewpoint, the world acts back on us to constrain the points of view that are possible (Dean et al., 2005; Seale, 1999). The contextualised differences found in the social world - historical, cultural, spatial, and temporal - that are embraced by critical realism are expressed through multiple social theoretical perspectives. These endeavour to facilitate a greater understanding and explanation of any given phenomenon. Theory, like knowledge that informs it, is viewed as changeable and dynamic. Consequently, theory creation is retroductive, deriving from existing analogies of a known phenomenon, and new explanations of experienced (empirical) behaviour and social practices obtained from social actors and their understanding of society

(Bhaskar, 1986; Collier, 1994; Steinmetz 1998). Here Bhaskar asserts the necessity of an empirical grounding of theoretical standpoints (Bhaskar, 1986). This diversity of interpretations only enriches the knowledge-base guided by theoretical abstraction, and allows room for theoretical combinations that better explain the experienced world, and more specifically, the phenomenon under investigation (Anfara and Mertz, 2006; Dobson, 2001).

As a critical realist, I also take this retroductive approach in the creation of theory to better understand destination vulnerability. I build upon the current knowledge-base on destination vulnerability presented in Chapter 2, and combine it with the most advanced insights from current theories of chaos-complexity theory (Section 3.3.1), resilience (Section 3.3.2), vulnerability (Section 3.3.3), place (Section 3.4.5.1), relational scale (Section 3.4.5.2), and geographies of temporality (Section 3.4.5.3), to create a new theoretical base for understanding and analysing destination vulnerability, which will facilitate change and transformation. This approach to theorisation also resonates highly with geography, where the development of theory pertaining to events and human experiences within the tangible world is built upon observations and analysis undertaken within that world (Phillips, 2005), an endeavour that has made „fieldwork" an integral part of geographical knowledge generation. But before moving onto the critique of each of these theories in relation to destination vulnerability, a review of current tourism approaches to sustainability is needed to situate this theoretical enquiry in the wider context of tourism research on sustainability. The review is presented in the next section.

3.3   A systems approach in understanding destination vulnerability and resilience

Discussions on sustainability in the context of tourism is arguably the most prominent feature of contemporary tourism discourse (Higgins-Desbiolles, 2010; Saarinen, 2006). Defining sustainability and identifying ways in which to promote sustainability in the context of tourism has featured prominently in tourism research, resource management strategies, and policy and planning debates since the 1980s (see Aronsson, 2000; Hall and Lew, 1998; Hunter, 1997; Miller and Twining-Ward, 2005; Mowforth and Munt, 2009; and Saarinen, 2006 for reviews of sustainable tourism discourse). However, despite widespread interest from academia, industry, non-government organisations (NGOs), and international representative and tourism monitoring organisations (United Nations World Tourism Organisation and Pacific Asia Travel Association are but two examples), credible pathways to achieving sustainability within the tourism context remain elusive (Higgins-Desbiolles, 2010; Farrell and Twining-Ward, 2005; Mowforth and Munt, 2009). One fundamental reason for this revolves

around the way sustainability is defined in the tourism context (Butler, 1999; Higgins-Desbiolles, 2010; Hunter, 1997; Saarinen, 2006; Wall, 1997). The key question here is „what do you want to sustain?‟ Is it the natural and cultural resource-base upon which tourism activity is based, or is it the economic viability of industry and business operations in a particular place or destination over time and space? Or is it something else altogether?

Wall (1997) and Butler (1999) make a distinction between „sustainable tourism‟ and „sustainable development in the context of tourism‟. Sustainable tourism denotes the viability of tourism activity *only* for an indefinite period, prompting Wall (1997) to relabel the concept „sustaining tourism‟. „Sustainable development in the context of tourism‟ falls more in line with more holistic conceptualisations of sustainability, and is defined by Butler as:

> Tourism which is developed and maintained in the area (community, environment) in such a manner and at such a scale that it remains viable over an indefinite period and does not degrade or alter the environment (human and physical) in which it exists to such a degree that it prohibits the successful development and wellbeing of other activities and processes (1999: 35).

This conceptualisation is inclusive, encompassing all the sectors relevant to development, and includes the notion of limits and appropriate prioritisation of multiple development strategies (of which tourism is one option) as tourism becomes embedded in a wider social and environmental context (Higgins-Desbiolles, 2010). However, tourism is not alone in its inability to agree on one definition. Sustainability as a concept has been contentious since the release of the Brundtland Commission‟s report *Our Common Future* in 1987, with its meaning and application reflecting the interests of the diverse users that range from industry sector actors to international non-government organisations (Jabareen, 2008; Mowforth and Munt, 2009). But the basic premise of sustainability is based upon the improvement of the quality of human life - not a certain industry - while living within the carrying capacity of supporting eco-systems, so that the ability of future generations to meet their own needs is not compromised (IUCN et al., 1991; Jabareen, 2008; Saarinen, 2006; World Commission on Environment and Development, 1987). This is not to say that the needs of people and those of any given industry are conflicting, but it does widen attention beyond sector interests to consider a greater good or long-term agenda that may or may not be met through tourism development (Higgins-Desbiolles, 2010; Saarinen, 2006; Wall, 1997).

The threat that such a holistic sustainability approach poses to tourism expansion - including limiting tourism numbers, development, and questioning the appropriateness of tourism operations in certain ecologically and culturally sensitive contexts - has caused industry actors and aligned research interests to focus on *sustaining tourism* and its economic

viability (Butler, 1999; Fennell and Ebert, 2004; Higgins-Desbiolles, 2010; Hunter, 1997; McKercher, 1993). Wheeller (1993) goes one step further to suggest that the tourism industry has adopted sustainability discourse mainly to court the alternate tourism market which is more sensitive to sustaining ecological and cultural environments. Subsequently, tourism sustainability approaches are largely theoretically shallow, highly tourism-centric (often focussing on products or industry sub-sectors), and fail to engage in wider debates on the dynamics of development and sustainability that embrace three fundamental characteristics of sustainability listed below:

a. Holistic - pursuits toward sustainability require a holistic and integrative approach whereby development must be considered within a multi-scaled socio-political, cultural, economic, and ecological context;

b. Future-orientated - approaches must focus on long-term carrying capacities of ecosystems and the responsible usage of resources; and

c. Enhance equity - sustainability demands both intra- and inter-generational equity with regard to freedom and empowerment, quality of life, opportunities for advancement, and access to and usage of resources (Berno, 2003; Farrell and Twining-Ward, 2004; Hunter, 1997; Jabareen, 2008; Ritchie, 2008; Saarinen, 2006; Scheyvens and Momsen, 2008; Sharpley, 2000).

Such limitations have led to an incomplete understanding of the sustainability of tourism as a livelihood and industry, the factors that underlie place-based vulnerability and resilience, and the consequent design and application of inappropriate and limiting solutions (Farrell and Twining-Ward, 2004; Scheyvens and Momsen, 2008). These inadequacies have prompted calls for tourism researchers to look beyond the industry and the tourism system and align tourism research with the interdisciplinary holistic systems approaches found in sustainability science, resilience thinking, ecology, contemporary vulnerability research, and chaos-complexity theory (Campling, 2006; Farrell and Twining-Ward, 2004; Scheyvens and Momsen, 2008; Scott et al., 2008). These approaches view sustainability as a dynamic journey and path, rather than an end-point or achievable goal arrived at through a linear process (Farrell and Twining-Ward, 2004; Markus et al., 2006). Scott *et al.* (2008) identify four advantages in applying a systems approach to the management of change within a tourism context. First, adopting a systems approach assists in the identification of the stakeholders in the system. Second, it illuminates the importance of networks and interactions between those networks in determining differential outcomes (both positive and negative) for different actors within and across systems. Third, it recognises that the effects of a shock or stressor may be transferred across system boundaries through organisational

relationships. Finally, systems approaches enable an analysis of the factors that influence the intensity of the impact of the event on the system, and explain rates of recovery and rejuvenation.

The application of chaos-complexity theory, resilience, and vulnerability approaches to sustainability in the context of tourism has begun. Zahra and Ryan (2007), for example, employ chaos-complexity theory to explore structural change in New Zealand‟s regional tourism organisations. Edgar and Nisbet (1996) use chaos-complexity theory to explore the effectiveness of long-term strategic planning and forecasting in managing hospitality organisations and businesses. Farrell and Twining-Ward (2004) apply the Adaptive Cycle Metaphor and Panarchy Model (Holling and Gunderson, 2002; Holling et al., 2002b) used in resilience approaches to better explain the dynamic and multi-dimensional nature of the tourism system. Petrosillo *et al.* (2006) uses the same models to help assess the potential adverse effects that tourism has on resource values (termed ecological fragility or vulnerability) within tourism-based systems. Baker and Coulter (2007), Calgaro and Lloyd (2008), and Moreno and Becken (2009) instead adopt a vulnerability approach to assess destination vulnerability and the sustainability of tourism livelihoods. Baker and Coulter (2007) use the Sustainable Livelihoods (SL) Framework (DFID, 1999b) to evaluate the impact of the 2002 and 2005 Bali bombings on the livelihoods of Bali beach vendors. Calgaro (2005) and Calgaro and Lloyd (2008) adopt the Sustainability Science Framework (Turner et al., 2003) to guide the assessment of destination vulnerability in the 2004 tsunami-affected Thai destination of Khao Lak. Whilst Moreno and Becken (2009) apply Polski *et al.*‟s (2007) Vulnerability Scoping Diagram to assess coastal destination vulnerability to climate change in Fiji. A brief overview of each approach and their contribution in understanding destination vulnerability and resilience is outlined in the following three sub-sections.

3.3.1   Chaos-complexity theory

Theories of tourism have long recognised the complexity of the tourism system (see Leiper, 1990; Mill and Morrison, 1985; Pearce, 1989) but they are too linear and deterministic, and therefore fail to recognise the complex interrelationships and power dynamics that exist between tourism stakeholders and the competing agendas that drive change within the system (McKercher, 1999). This weakness has prompted support for and usage of chaos-complexity theory over widely used models like Butler‟s Life Cycle Model (see Butler, 1980) to better characterise and understand the dynamism of tourism systems (see Edgar and Nisbet, 1996; Faulkner and Russell, 1997; Laws et al., 1998; McKercher, 1999; Ritchie, 2008; Russell and Faulkner, 1999; Russell and Faulkner, 2004; Scott et al., 2008; Zahra and

Ryan, 2007).

Grounded in mathematics, chaos-complexity theory embraces non-linearity, destabilising relationships and disequilibrium, spontaneity, multiple surprises, and adaptation to change - conditions that better represent reality – over linearity and the pursuit for a return to a desired equilibrium (Faulkner and Russell, 1997; Faulkner, 2001; Lorenz, 1993; McKercher, 1999). That said, chaos-complexity theory does acknowledge the existence of an undercurrent of order and periods of stability that are produced by the collective adherence to a number of underlying principles, such as a common destination vision or common value systems and goals that evolve over time (Lewin, 1993; McKercher, 1999; Zahra and Ryan, 2007; Byrne, 1998). Figure 3.1 presents McKercher"s (1999) Chaos Model of Tourism that is based on the main principles of chaos-complexity theory. Each of the nine main elements are interlinked and therefore their success is dependent on the functionality of the other elements.

Five advantages of applying chaos-complexity theory to tourism systems are identified in the literature. First and foremost, it embraces the dynamism of tourism systems that are capable of self-organisation, whereby individual differences and external disturbances simultaneously influence perpetual change, adaptation, and complexity (Faulkner and Russell, 1997; McKercher, 1999; Scott et al., 2008). Change (including crises) presents constant challenges to tourism stakeholders (from policy makers and planners to industry support organisations and businesses), but it also creates opportunities for destination vitality and re-invention, creative development, and expansion through the realignment of existing networks, the creation of new networks, and the opening of new markets (Edgar and Nisbet, 1996; Laws et al., 1998; McKercher, 1999; Scott et al., 2008). Second, it recognises the interactive role human agency plays in shaping the system, whereby the competing actions of individuals and organisations, driven by simple rules and contextualised ideologies influence, change (Faulkner and Russell, 1997). Third, it helps explain why cooperative relationships form between competing businesses in a destination (McKercher, 1999). To survive, co-dependent tourism businesses must simultaneously coexist and compete against each other, causing independent enterprises to act in their own best interest first and the interests of their community second (McKercher, 1999). Fourth, it acknowledges that disturbances and agency trigger chain reactions that feed back into the system and can precipitate change, adaptation, and evolution over time and space (Edgar and Nisbet, 1996; Faulkner and Russell, 1997; McKercher, 1999; Russell and Faulkner, 2004). The change or alteration does not necessarily have to be large. Known as the „butterfly effect", small changes in the early stages of development can produce profoundly different outcomes, as errors and

successes compound over time (Faulkner, 2001; Lorenz, 1963; McKercher, 1999; Zahra and Ryan, 2007). Finally, it can be applied to multiple scales and multiple interacting systems as the interconnections between system elements, stakeholders, organisations, and wider socio-political and economic systems are based upon relationships and networks that reach
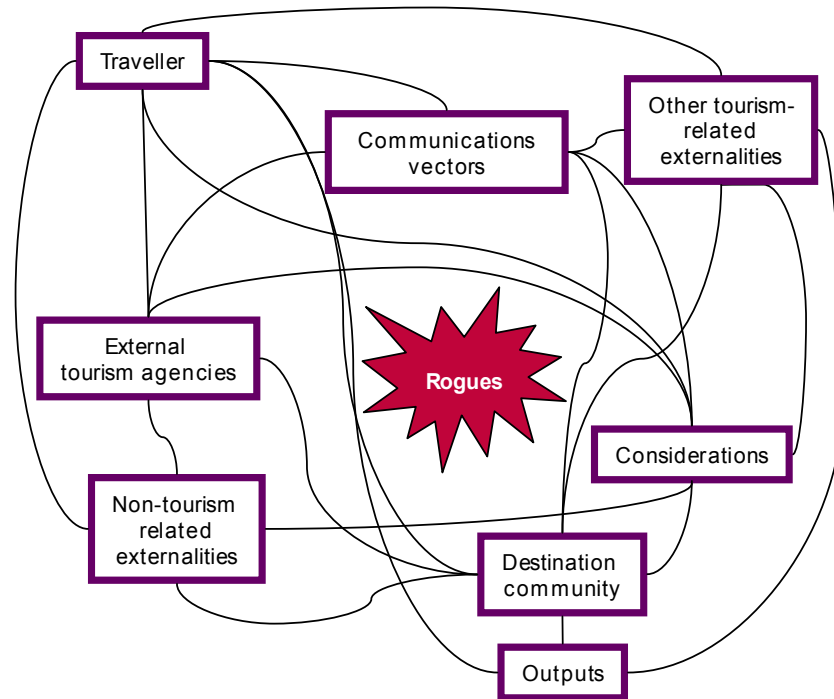
Traveller	Model starts here with the recognition that travel decisions & consumer tastes are fickle, causing immediate instability for the destination community
Destination community	Comprises of businesses wholly or partially reliant on tourism for economic viability - accommodation, attractions, activities, transport, & support services
Communication vectors	Interlinked vectors connecting travellers with destinations comprise travel agents, tour operators, travel wholesalers, word-of-mouth, & the internet
Considerations	Considerations influencing communications activity effectiveness include: business relationships, agent preferences, client & agents destination experiences, competitiveness of alternate destinations, marketing strategies, time availability, & cost considerations
External tourism agencies	Shows the public sector structures and processes that shape the tourism system i.e. tourism promotion agencies, planning laws, governmental visa polices, foreign investment laws, & bilateral trade agreements
Other tourism externalities	Represents marketing product portfolio choices of operators & agents reflecting the product choices, chosen target markets, & competitors they wish to compete against
Non-tourism externalities	Indicates multiple crises, shocks & challenges faced by destinations & the industry
Chaos makers/ Rogues	Signifies the role individuals (human agency) & their actions play in shaping a destination, region, country, transport, communication channels, & considerations
Outputs	Denotes relationship between tourism impacts (foreign exchange earner, economic development tool, environmental degradation etc) & destinations, travellers, & marketing product portfolio choices

Source: Chaos Model of Tourism adapted from McKercher (1999: 430).
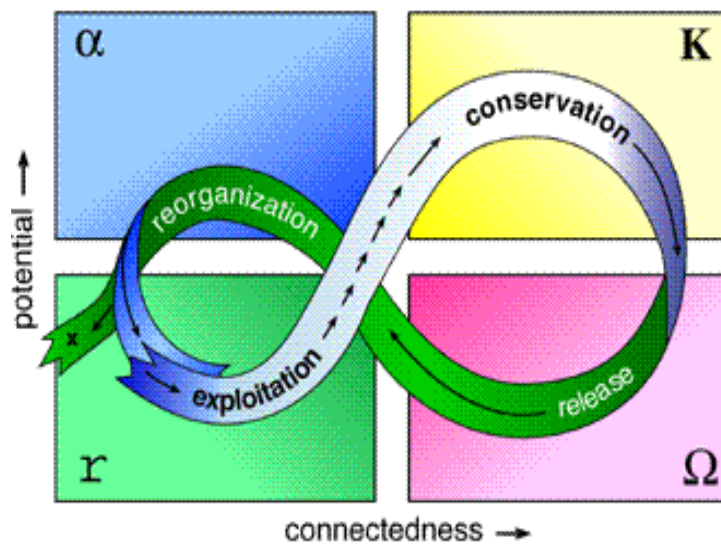
Figure 3.1: Chaos Model of Tourism

This approach does, however, have three main detractors. First, it completely excludes the ecological system and important interactions between the social and ecological elements of the coupled system. This is a major oversight considering that the natural environment is often the main attraction in coastal- and mountain-based tourism destinations. Second, it does little to explain how the listed elements influence destination vulnerability and resilience over time. McKercher"s (1999) Chaos Model of Tourism, for example, is too random to help us understand interlinkages and relationships between factors, process, and feedbacks. Finally, little insight is given into how stakeholders reorganise in times of change i.e. what types of resources they need to cope and adapt to change, and how does the political economy of access and entitlement to resources influence response capabilities?

3.3.2   Resilience

Like chaos-complexity theory, resilience approaches embody the complexity and dynamism of the living system, but its origins and emphasis are different. Grounded in ecology, resilience thinking accepts uncertainty and change as a constant condition of the social-ecological system. Its focus, then, is on adapting to, co-existing with, and learning from, the multiple changes and cross-scale interactions that unfold at different speeds (gradual versus rapid transitions) over time (Berkhout, 2008; Farrell and Twining-Ward, 2004). Emphasis is placed on contextualised process - those that determine differential outcomes of the adaptive cycle, ecological thresholds, social-ecological relations, and the consequences of disturbance responses that feed back into the system (Miller et al., in press; Nelson et al., 2007). Holling"s „lazy eight" conceptualisation of adaptive cycles (Figure 3.2) captures the essence of how adaptive cycles change and is characterised by four phases: growth and exploitation where resources are accumulated (r), conservation and stabilisation (K), collapse or release triggered by either a shock or by a threshold break (Ω), and rapid system reorganisation (α) (Holling, 2001). Yet this dynamic cycle does not occur in isolation. Figure 3.2 shows that disturbance in one system can have repercussions and instigate change in other interlinked and nested systems (Folke, 2006).

Resilience champions multiple voices and the existence of reflexivity, multiple stable states, learning and adaptive governance, and diverse framings of sustainability (Turner, 2008; Farrell and Twining-Ward, 2005). Its reframing of risk and change as predictable and unpredictable constants in the social-ecological system (as opposed to seeing risk and disruptions as unacceptable and abnormal) is progressive. For Farrell and Twining-Ward (2004; 2005), acknowledging the simultaneous existence of multiple states explains the
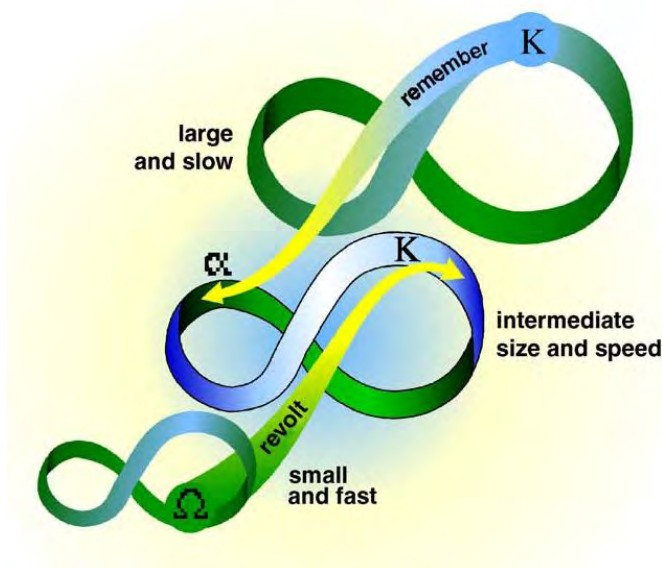
During the cycle, time flows unevenly, shown by changes in the arrows. The short closely-spaced arrows indicate slow changes whilst the long arrows indicate rapid change.

The x-axis represents component cohesion which increases when there is a build-up and conservation of resources and the system becomes more stable. With stability comes brittleness that is rapidly released when a threshold is passed or a trigger event occurs.

The y-axis, representing potential accumulation of capacity as knowledge is gathered and components learn to interact as it *reorganises (α)* and grows through *exploitation* of stored potential *(r).*

As the system *reorganises (α)* capacity potential can be lost and exits the system (x) .

Source: Holling and Gunderson (2002: 34).
Source: Holling and Gunderson (2002: 34)

Figure 3.2: Adaptive Cycle metaphor

The Panarchy model emphasises the cross-scale interplay between nested adaptive cycles whereby disturbance in one system creates change and adjustments in linked systems.

Two connections that are critical in creating adaptive systems are the *revolt* and *remember* connections.

The *revolt* connection shows that fast and small events in one system can prompt a system collapse or release (K) in a larger and slower system.

The *remember* connection, on the other hand, can facilitate renewal as the system reorganises (α) by drawing upon the resources that have been accumulated and stored in a larger, slower cycle.

Source: Holling et al. (2002: 75).
Source: Holling et al. (2002a: 75).

Figure 3.3: Panarchies

dynamism of overlapping tourism systems that evolve over space and time. Destinations can be viewed as micro-systems that overlap and link into larger systems that encompass the complexity of the tourism industry, and the wider world within which they operate (Farrell and Twining-Ward, 2005; Farrell and Twining-Ward, 2004). For example, when a perturbation or

trigger event occurs in tourism, tourists often get diverted to other destinations (other micro-systems) whilst the greater tourism system survives through adaptation. Recognising the possibility of multiple stable states also allows for the expressions of place-based differences. There are a myriad of ways in which individual systems function and adapt to change, based on the system characteristics, resources at hand in a particular system, and patterns of resource usage within the system. Finally, its emphasis on feedback consequences of actions taken following a disruption, and their cascading effects on the whole system, emphasise the significance of cause and effect relationships that evolve over space and time (Miller et al., in press). In doing so, it appreciates the different temporal and spatial scales within which systems operate, and the multiple consequences and emergent properties of change (Farrell and Twining-Ward, 2005; Farrell and Twining-Ward, 2004; Folke, 2006; Gunderson and Holling, 2002). However, resilience and systems ecology have some detractors when evaluating its effectiveness in understanding the dynamics of the social dimension of the social-ecological system.

Resilience, as a concept, successfully explores the processes of *how* to transform through social, institutional and organisational learning (Miller et al., in press) but does not sufficiently delve into deeper questions on *why* some choices and responses are taken over others, the reasoning for their success or failure (including why appropriate responses fail), and *who* these actions serve and marginalise (Jasanoff, 2008; Leach, 2008; Shah et al., 2008). Consequently, it lacks theoretical depth in analysing the social dimension of the social-ecological system including the political economy of resource and power distribution, usage of same within the socio-economic system, and the consequences of these patterns over space and time (Leach, 2008; Miller et al., in press). Second, it is highly conceptual, problematising its usage in guiding the assessment of sustainability challenges and informing policy and practice (Berkhout, 2008; Jasanoff, 2008; Miller et al., in press). It is more of a heuristic model than a detailed analytical tool (Folke, 2006), necessitating the simultaneous use of social science theories to illuminate the missing detail. Third, its focus on identifying tipping points[§§] to help anticipate change is difficult to apply to the social system. Multiple and competing human actions, reactions, and the resources they access and use to adapt in a given situation, simultaneously shape each other and alter constantly, making it extremely difficult to predict with any certainty future movements within the system and possible tipping points (McKercher, 1999; Zahra and Ryan, 2007). Petrosillo *et al.* (2006) profess to develop ecological, social, and economic indicators for identifying tipping points in social-ecological

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[§§] A tipping point or threshold refers to a breakpoint between two regimes of a system (Walker and Meyers, 2004). It is the critical point in an evolving situation that, once breached, leads to a new and irreversible shift in the system, brought about by the destabilisation and collapse of the existing regime.

tourism-based system in the Salento region of southern Italy. However, they only give brief reference to three possible socio-economic indicators that they subsequently fail to measure: tourism seasonality, resident perceptions of tourism, and high regional dependency on tourism flows. In doing so, they conveniently side-step the social dimension in favour of the ecological dimension that resilience models were purportedly designed to assess.

To effectively assess the vulnerability and resilience of destination communities, there is a pressing need to move beyond social-ecological system processes to focus on agency, power and accountability operating within the system: the role actors play in creating and perpetuating vulnerability, examining relationships and networks, and considering the multiple framings or narratives, and ideologies that drive actor choices and competing actions (Jasanoff, 2008; Shah et al., 2008). Contemporary vulnerability and sustainability science approaches do this.

3.3.3   *Vulnerability-based approaches*

Vulnerability-based approaches prompt deeper analysis into *who* is vulnerable or resilient, *to what*, and *why*? Vulnerability research offers a more sophisticated understanding of context, agency, equity, justice, and power (Eakin and Luers, 2006; O'Brien, 2006). Central to this understanding are the multi-scaled socio-political processes that shape reactions to risk and change, and the form these changes take in the social-ecological system, including the underlying influences of power systems, values and ideologies, knowledge, and cultural norms (Miller et al., in press). This includes resistance to change, trade-offs between people, systems, levels and scales, and the narratives used by actors and institutions to acquire credibility, legitimacy, authority, and power (Berkhout, 2008).

Numerous frameworks have been created over the subject"s evolution to better understand the determinants of vulnerability.   Table 3.1 presents a gap analysis that critiques the merits of 10 vulnerability frameworks in capturing the main causal factors and processes that create and perpetuate destination vulnerability. The criterion includes those core characteristics identified in Chapter 2 that influence the creation and perpetuation of destination vulnerability. Here, power systems, cultural norms, human agency, and the political economy of resource distribution are recognised as multidimensional and differential drivers of vulnerability in the social-ecological system over time and space. The frameworks chosen for the gap analysis derive from four main research streams that have an interest in vulnerability, as discussed in Section 2.3: climate change, development, risk and hazards, and sustainability science. The one exception is Nankervis" (2000) Tourism Vulnerability Framework, which provides a unique tourism perspective to vulnerability approaches.

The gap analysis clearly shows that each approach adds much value and richness to the conceptualisation and assessment of vulnerability in a tourism context. The differing focal points, as well as their strengths and weaknesses for assessing destination vulnerability, naturally reflect variances in purpose, approach, analytical scope, and contextual application. That said, five frameworks stand out for their superior coverage of key components of destination vulnerability and require further examination: Pressure and Release (PAR)/Access Model (Wisner et al., 2004), Sustainable Livelihoods (SL) Framework (DFID, 1999b), Bogardi Birkmann Cardona (BBC) Framework (Birkmann, 2006), Sustainability Science Framework (Turner et al., 2003), and Nankervis" (2000) Analytical Framework for Vulnerability in the Tourism Industry.
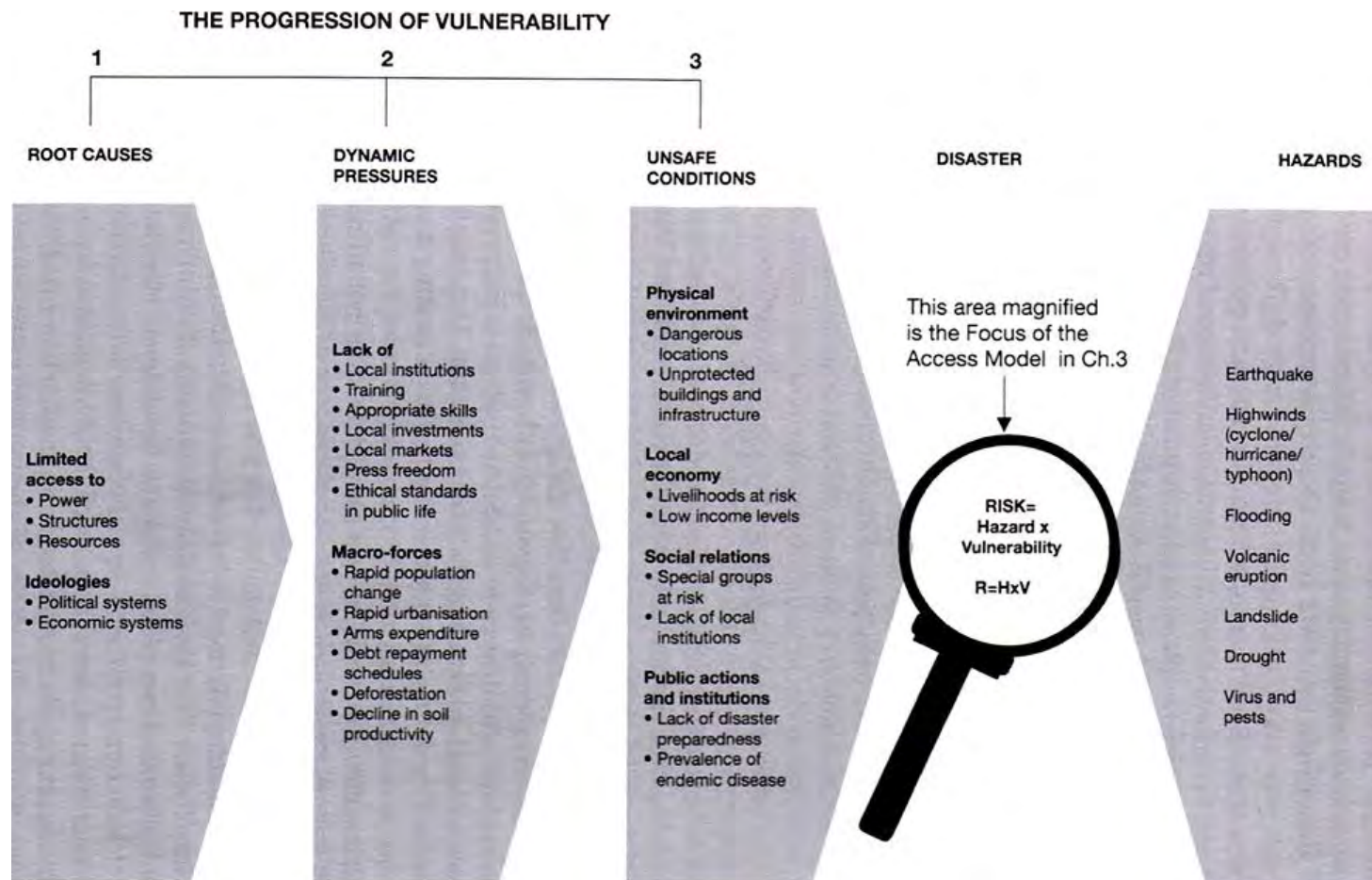
The two frameworks that best encompass the political economy of differential resource distribution, and its impact on vulnerability levels within and across populations, are the PAR/Access Model (Wisner et al., 2004) presented in Figure 3.4 and the SL Framework (DFID, 1999b) shown in Figure 3.5. Using hazards as its starting point, the PAR Model depicts disasters as the outcome of two opposing forces: accumulating and compounding dynamic processes that generate vulnerability on the one hand, and physical exposure to hazard events on the other. This portrayal reminds us that natural disasters are social constructs, not external natural events that lie outside the social-ecological system (Hewitt, 1983; O'Keefe et al., 1976; Oliver-Smith, 1996; Pelling, 2003; Wisner et al., 2004). In the words of O"Keefe *et al.* "Without people, there is no disaster" (1976: 566). A disaster is a complex, place-oriented product of a hazardous event and the historical outcomes of socio-political and economic forces (distinct from environmental forces) that have shaped societal structures and society"s capacity to respond effectively to the hazard (Wisner et al., 2004). Disasters occur when a significant number of vulnerable people experience a hazard (or series of hazards) and sustain severe damage to their livelihoods and social system to such an extent that recovery is improbable without external aid (Wisner et al., 2004).

Viewing a disaster as a process, the PAR Model acknowledges that pressure can come from either side of the risk equation, but the pressure can only be released by reducing vulnerability levels. Vulnerability acts as the system"s pressure valve. The linked Access Model demonstrates how unsafe conditions arise due to the socio-political and economic processes that determine access to assets, income, and livelihood choices (Wisner et al., 2004). The main strength of the PAR/Access Model is its portrayal of vulnerability creation and perpetuation as a dynamic process that needs to be understood, and the underlying root causes addressed; the identification of factors is not enough (Birkmann, 2006).

Table 3.1: Gap analysis of vulnerability frameworks for assessing destination vulnerability

KEY: ■ meets criterion   ☐ general vulnerability attributes   ▨ tourism-specific attributes

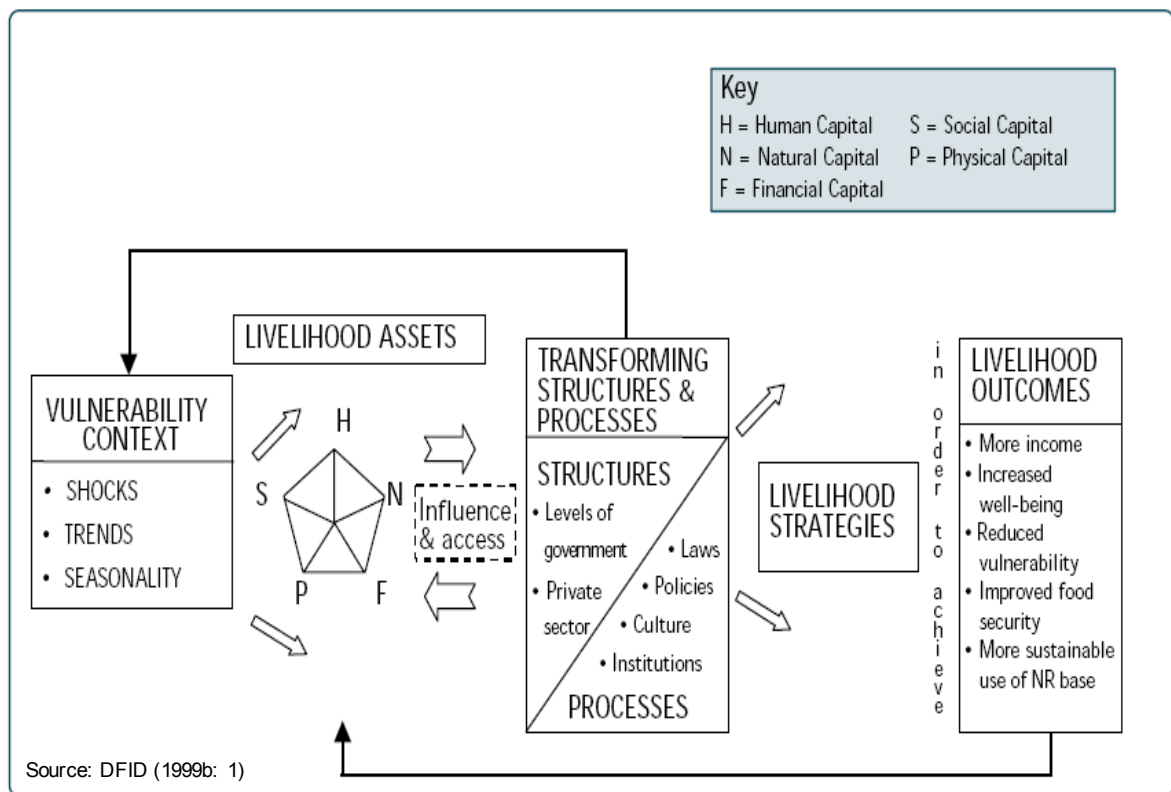| Attributes/Elements \ Framework	UNDP-GEF Adaptation Policy Framework (Downing and Patwardhan, 2003)	Capacity Vulnerability Analysis (Anderson and Woodrow, 1998)	Double Structure Vulnerability Framework (Bohle et al., 1994)	Pressure & PAR/ Access Model (Wisner et al., 2004)	SL Framework (DFID, 1999b)	CARE Household Livelihood Security Assessment (Frankenberger et al., 2000)	Vulnerability Scoping Diagram (Polsky et al., 2007)	Sustainability Science Framework (Turner et al., 2003)	BBC Conceptual Framework (Birkmann, 2006)	Analytical Framework for Vulnerability in the Tourism Industry (Nankervis, 2000)
Scale of analysis	top-down	bottom-up	multi-scalar	multi-scalar	multi-scalar	bottom-up	multi-scalar	multi-scalar	multi-scalar	multi-scalar
Origin and focus	climate change & adaptation	development & disaster risk reduction	development & food security	disaster risk reduction	development & livelihoods	hazards & livelihoods	sustainability science	sustainability & risk	sustainability & risk	tourism & risk
Analysis nature & scope	analytical short→ long multi-dimensional	analytical short-term	analytical short→ long multi-dimensional	explanatory short→ long linear	analytical short→ long multi-dimensional	analytical short→ long linear	analytical short→ long multi-dimensional	analytical short→ long multi-dimensional	analytical short→ long multi-dimensional	analytical short→ long multi-dimensional
Identifies vulnerability as a product of: — Human system	■	■	■	■	■	■	■	■	■	■
— Biophysical system	■	■	■	■	■	■	■	■	■	■
Vulnerability is place-specific	■	■	■	■	-	■	■	■	■	-
Vulnerability is highly scaled	■	-	-	-	■	■	■	■	-	■
Vulnerability is dynamic - characteristics of shocks, coupled systems, social groupings change over time and space	■	-	-	■	■	■	-	■	■	-
Inclusion of multiple shocks and stressors	■	■	-	■	■	-	-	■	-	■
Identification of factors that influence exposure (including physical positioning of development) beyond shocks or stressors	■	-	-	■	-	■	■	■	■	-
Inclusion of factors that influence a system"s sensitivity to shocks	■	■	■	■	-	■	■	■	■	■
Inclusion of tourism-specific sensitivities i.e. main markets & marketing strategies, seasonality, destination development histories, & image sensitivity to risk perceptions	-	-	-	-	-	-	-	-	-	■
Includes the way in which systems experience shocks and surprises and their capacity to respond in the short-term	■	■	■	-	-	-	■	■	■	-
Recognition of adjustments and adaptations of system following initial response	■	■	-	-	-	-	-	■	■	-
Includes consequences and risks of slow/poor recovery	-	-	-	-	-	-	-	-	-	-
Inclusion of political economy of access and entitlements to resources (including governance & institutional flexibility)	■	■	■	■	■	■	-	■	-	-
Vulnerability is contextual and influenced by historically-embedded power systems, cultural norms, ideologies, and personal attitudes, perceptions, expectations and experiences	■	■	■	■	■	■	■	■	■	■
Breakdown of vulnerability drivers & causal processes → identification of scaled entry points for change.	-	-	-	■	■	■	-	■	-	■
Portrayal of the causal sequence of vulnerability & resilience (including feedback mechanisms) over space and time	-	-	-	■	-	-	-	■	■	-

THE PROGRESSION OF VULNERABILITY

1   2   3

ROOT CAUSES   **DYNAMIC PRESSURES**   **UNSAFE CONDITIONS**   **DISASTER**   **HAZARDS**

Limited access to
• Power
• Structures
• Resources

Ideologies
• Political systems
• Economic systems

Lack of
• Local institutions
• Training
• Appropriate skills
• Local investments
• Local markets
• Press freedom
• Ethical standards in public life

Macro-forces
• Rapid population change
• Rapid urbanisation
• Arms expenditure
• Debt repayment schedules
• Deforestation
• Decline in soil productivity

Physical environment
• Dangerous locations
• Unprotected buildings and infrastructure

Local economy
• Livelihoods at risk
• Low income levels

Social relations
• Special groups at risk
• Lack of local institutions

Public actions and institutions
• Lack of disaster preparedness
• Prevalence of endemic disease

This area magnified is the Focus of the Access Model in Ch.3

RISK=
Hazard x
Vulnerability

R=HxV

Earthquake

Highwinds (cyclone/ hurricane/ typhoon)

Flooding

Volcanic eruption

Landslide

Drought

Virus and pests

Source: Wisner *et al* (2004: 51).

Figure 3.4: Pressure and Release/Access to Resources Model

A. Pressure and Release Model

```
┌─────────────────────────┐                    ┌──────────────────────────────┐
│ 1  Social relations     │◄──────────────────►│ 4  Structures of domination  │
└─────────────────────────┘                    └──────────────────────────────┘
```

2a Households	2b Their resources	3a Income	3b Access
Individuals in Production Unit 1 (e.g. 'household')	and assets eg. land, labour, capital, tools, networks, information and expectations of resources from others together termed household access profile and individual access profile	opportunities each face a range of income opportunities	qualifications each income opportunity has access qualification and a pay-off (money, yields of crop, etc)
Individuals in Production Unit 2			
Individuals in Production Unit 3			
Individuals in Production Unit 4			

5 Choices of household
each household chooses one or (usually) more income opportunities (often a number of times a year)

9 Outcome of decisions	8 Decisions	7 Household budget	6 Livelihood
changes in access profile at a later time	decisions taken on consumption, investment, and realisation of assets	livelihood contribute to household budget which is in deficit or surplus at different times of the year	sum of chosen income opportunities and mechanisms

Births, deaths, and demographic changes in time period

B. Access to Resources Model

Key
H = Human Capital   S = Social Capital
N = Natural Capital   P = Physical Capital
F = Financial Capital

Source: DFID (1999b: 1)

Figure 3.5: SL Framework

Furthermore, the PAR/Access Model clearly depicts vulnerability as a product of a myriad of socio-political and economic forces that are influenced by embedded power structures, cultural norms, and human agency. In doing so, it highlights both the tangible and intangible resources that create disparities in vulnerability levels among sub-groups within a society. The main weaknesses of the PAR/Access Model are twofold. First, the depiction of change is too linear. Vulnerability creation and perpetuation is more fluid and dynamic in terms of scale, time, and actors involved, making it very difficult to demonstrate in diagrammatic form. This is a constant problem for most frameworks. Secondly, it underemphasises the human system‟s capacity to respond (including the consequences and attendant risks of slow/poor recovery), and restructure (adapt) following initial responses to the hazard.

The strength of the SL Framework lies with its clear identification of the types of capital needed to sustain robust livelihoods in the face of change, and those structures and processes that influence resource access. This strength prompted the usage of the SL Framework by Baker and Coulter (2007) in evaluating the impact of the 2002 and 2005 Bali bombings on the livelihoods of Bali beach vendors. The *livelihood assets pentagon* reflects the five types of assets: *human capital* (skills, knowledge, labour capacity, and health), *social capital* (family, social, business relationships and networks, formal civil group memberships,

social norms, and sanctions), *natural capital* (land, forests, water and marine resources, air quality, erosion protection, storm protection, and biodiversity levels), *physical capital* (basic infrastructure such as transport, shelter, sanitation and water, energy supplies, and communication systems), and *financial capital* (disposable income including savings and remittances, liquid assets, positive credit ratings, and insurance). Influencing access and entitlement to these resources are multi-scaled *transforming structures* (levels of government, private sector enterprises, judicial bodies, NGOs, religious institutions, civil organisations), and *processes* (policies, legislation, markets and asset regulatory bodies, social norms and beliefs, that regulate entitlements based upon gender, age, caste, and class) (Carney, 2002; DFID, 1999b).

The SL Framework, however, has its detractors (Adger, 2006; Birkmann, 2006; Brocklesby and Fisher, 2003; de Haan and Zoomers, 2005). First, the concept of vulnerability is used very broadly, encompassing both the livelihood assets and the drivers behind access disparities, plus the shocks themselves (Birkmann, 2006). Second, it concentrates on the social system rather than the coupled human-environment system and the complex risks that arise out of socio-ecological interactions that occur across scales and over time (Adger, 2006). Third, the role of scale and time in influencing vulnerability are under-represented. Time is loosely captured in the terms of „seasonality" and „trends" whilst representations of scale are limited to „levels of government" and „institutions". Fourth, the SL Framework does not explicitly explore the processes and interactions that shape a given place and its inhabitants. Finally, like the PAR/Access Model, the SL Framework does not demonstrate the exposure unit"s (individual, household, or community) capacity to respond to and recover from shocks, including the consequences of slow or poor recoveries. This is only implied through the acknowledgement of livelihood assets as a tool for building strong livelihoods. There is no acknowledgement of the new stressors that emerge from these conditions.

Subsequent frameworks, such as the BBC Model (Birkmann, 2006) (portrayed in Figure 3.6), and the Sustainability Science Framework (Turner et al., 2003) seen in Figues 3.7 and 3.8 go one step further to situate this place-specific examination of *who* to *what* and *why* within a wider context that recognises vulnerability as a dynamic and highly-scaled condition of the social-ecological system. Yet whilst both the Sustainability Science Framework (Turner et al., 2003) and the BBC Model (Birkmann, 2006) acknowledge the importance to the political economy of resource distribution, they lack the detail found in the SL Framework and the PAR/Access Model. Both models acknowledge that population characteristics, the multiple stressors populations are exposed to, the factors that increase their sensitivity to shocks and stressors, and their capacity to respond and adapt, are influenced by human and

environmental influences operating outside the focal population. These frameworks also acknowledge that adaptive capacity is contingent upon the pre-existing characteristics (including a system‟s strengths and weaknesses) of the affected system. Therefore, both short- and long-term responses and consequent feedbacks that dominate adaptive capacity and resilience research are acknowledged and incorporated into the frameworks. Together, these approaches enable the identification of appropriate entry points for action along with negotiation and decision-making processes (Miller et al., in press). These collective strengths prompted the use of the Sustainability Science Framework by Calgaro (2005) and Calgaro and Lloyd (2008) in the assessment of Khao Lak‟s vulnerability to the 2004 tsunami, as noted earlier in the chapter.

As argued in Chapter 2, there are few theoretical parameters for assessing destination vulnerability (see Calgaro and Lloyd, 2008; Carlsen and Liburd, 2008; Faulkner, 2001; Moreno and Becken, 2009). One exception is the Analytical Framework for Vulnerability in the Tourism Industry (hereafter referred to Nankervis‟ Framework) by Nankervis (2000), which provides a unique tourism perspective to vulnerability approaches. Nankervis‟ Framework (2000) (Figure 3.8) was designed to assist managers in assessing the international, supra-national, and national pressures that threaten the tourism industry. The framework consists of three main components: (i) the various socio-political and environment factors that contribute to the industry‟s vulnerability, (ii) the interconnected levels (macro, mosaic, and micro) at which vulnerability can be experienced by the industry, and (iii) the type of effects (ripple, cascade, and torrent) that are experienced through the various levels of industry. The horizontal axis shows the range of issues that may threaten or create opportunities for the industry in a given space and time. The issues are arranged under the following headings: political, economic, social, market and products, industry structure, geographic, and physical.
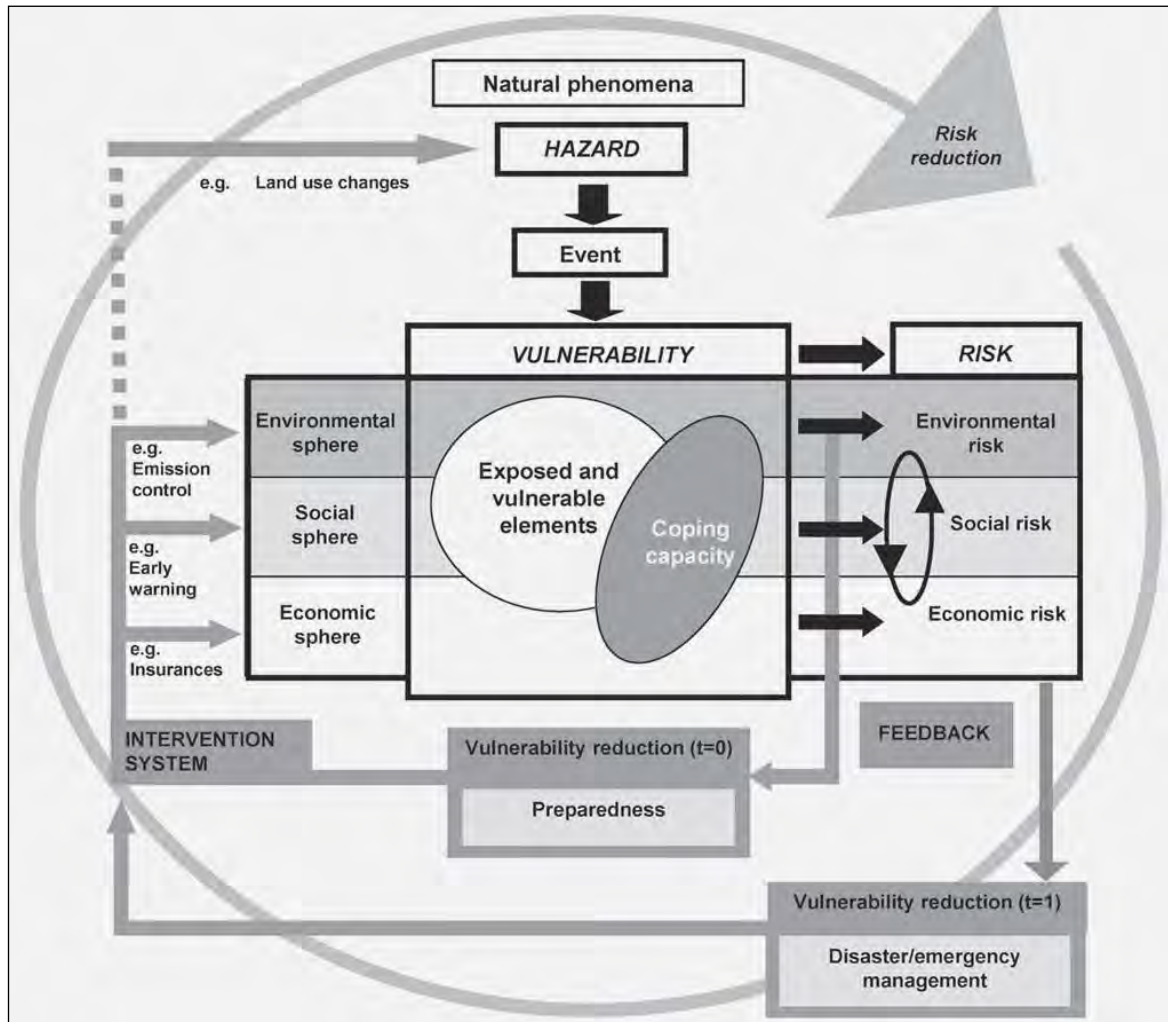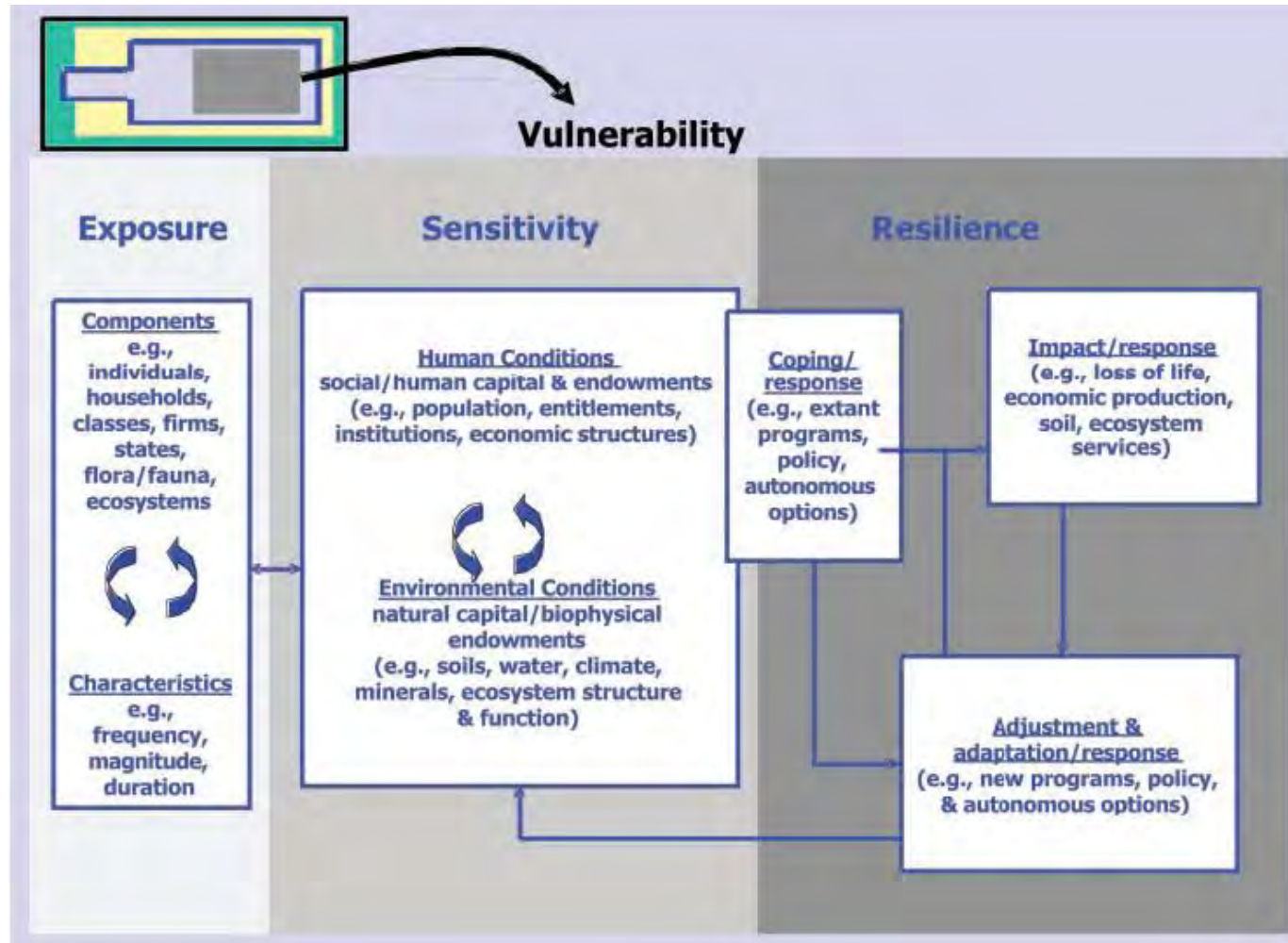
Source: Birkmann (2006: 34).

Figure 3.6: BBC Framework
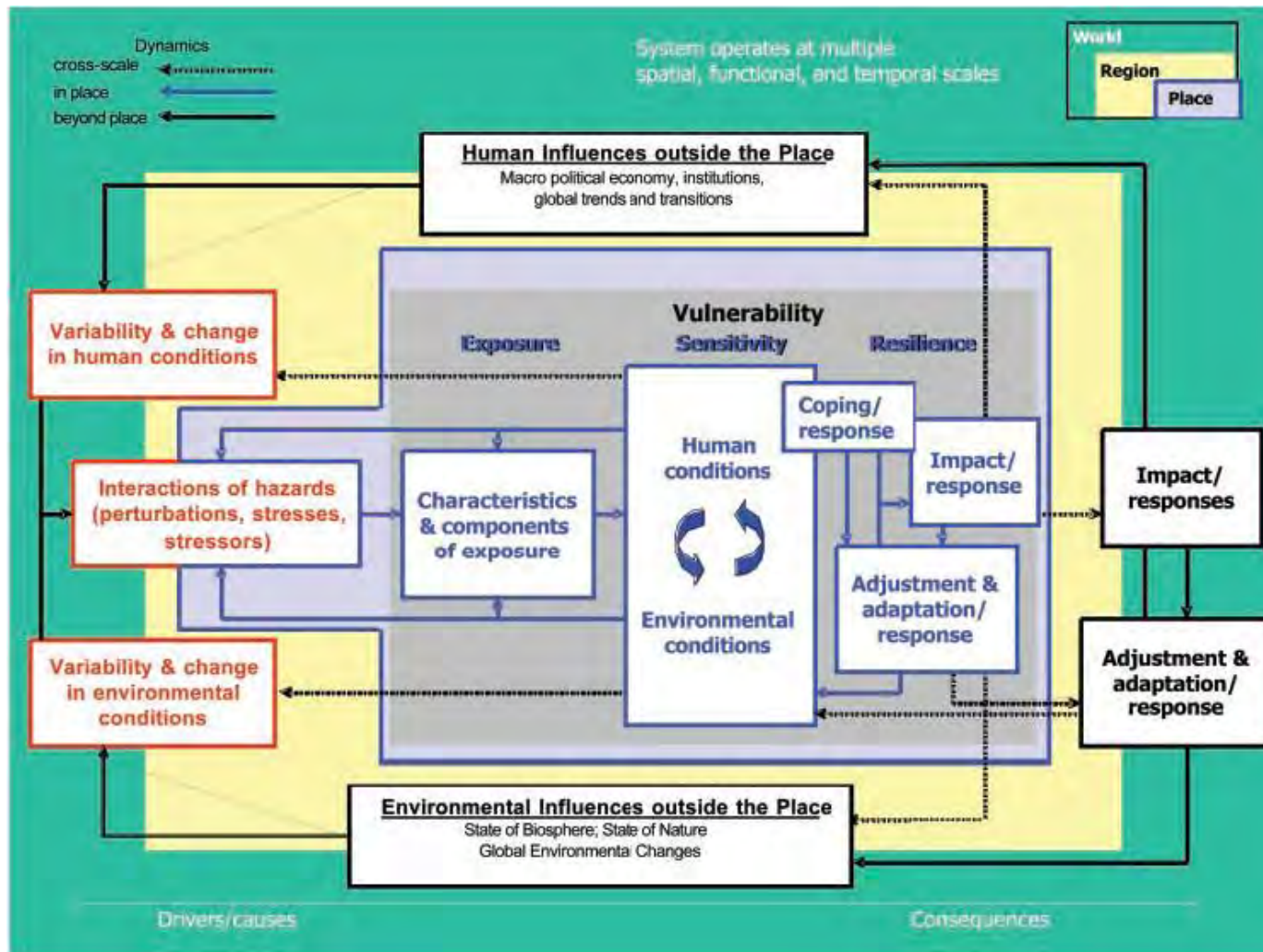
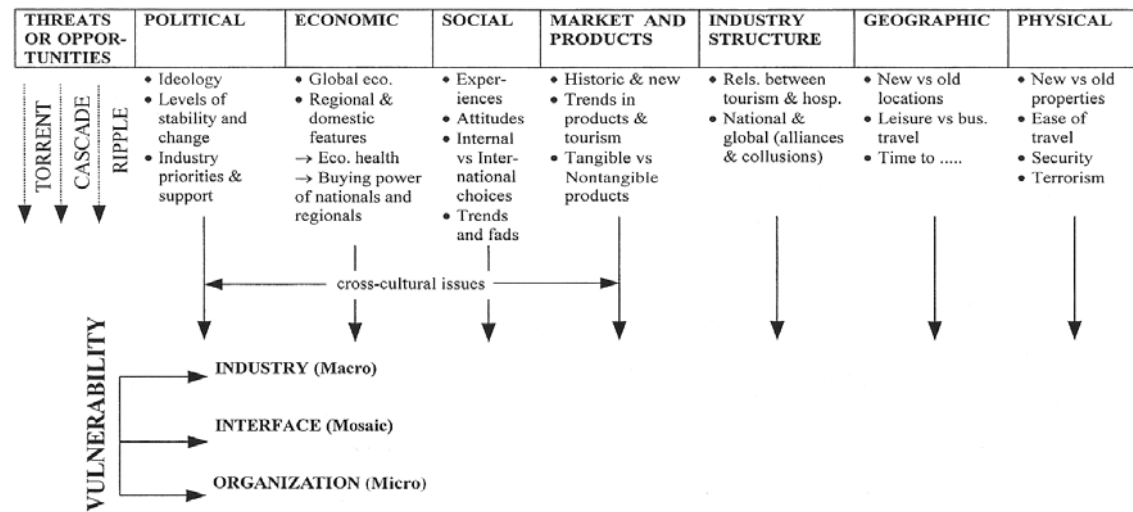Source: Turner *et al.* (2003: 8076).

Figure 3.7: Sustainability Science Framework

A. *Sustainability Science Framework*

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Source: Turner *et al.* (2003: 8077).

B. Interactive components of vulnerability within a given place

THREATS OR OPPOR-TUNITIES	POLITICAL	ECONOMIC	SOCIAL	MARKET AND PRODUCTS	INDUSTRY STRUCTURE	GEOGRAPHIC	PHYSICAL
	• Ideology • Levels of stability and change • Industry priorities & support	• Global eco. • Regional & domestic features → Eco. health → Buying power of nationals and regionals	• Exper-iences • Attitudes • Internal vs Inter-national choices • Trends and fads	• Historic & new • Trends in products & tourism • Tangible vs Nontangible products	• Rels. between tourism & hosp. • National & global (alliances & collusions)	• New vs old locations • Leisure vs bus. travel • Time to	• New vs old properties • Ease of travel • Security • Terrorism

TORRENT CASCADE RIPPLE

cross-cultural issues

VULNERABILITY

INDUSTRY (Macro)

INTERFACE (Mosaic)

ORGANIZATION (Micro)

Industry	Refers to the tourism industry and its globalised structure
Interface	Refers to the problematic linkages between industry sectors i.e. travel agents, immigration officials, airline operators, hotels, and tour operators
Organisation	Includes the organisational level encompassing actions of individuals
Torrent effects	Substantial effects causing widespread damage and long-term consequences
Cascade effects	Have a wider impact on more sectors of the industry and last longer
Ripple effects	These generally affect several sectors or tourism regions but are short lived and cause minimal damage

Source: Nankervis (2000)

Figure 3.8: Analytical framework for vulnerability in the tourism industry

Nankervis" Framework (2000) is instrumental in capturing and interpreting the multi-scaled factors and processes that create and perpetuate the vulnerability of the industry to shocks. However, its industry focus overlooks the complexity and dynamics of social-ecological systems of which destination communities are part of, as discussed in Section 3.2. Nankervis" Framework does not specifically address the way in which vulnerability is sustained or heightened within a given place. His inclusion of cross-cultural issues in influencing the political, economic, social, and market and products elements of the tourism system does touch on the importance of contextual influences, but fails to recognise the role human agency and power structures within a given place play determining differential vulnerability patterns. In addition, there is little mention of the environmental factors that contribute to destination vulnerability, with the exception of the attractiveness and desirability of the destination (categorised as geographic, physical, and product-orientated factors).

Despite the many strengths of vulnerability approaches presented in this section, they too have limitations in assessing the causal factors underlying destination vulnerability. Historically, vulnerability approaches have been highly normative, where risk reduction is sought so as to maintain equilibrium within the existing social-ecological system (Adger, 2008). This is beneficial when considering calculated risks to a select population or institution, but downplays uncertainty and the possibility of alternate stable states (Nelson et al., 2007). Second, the consequential feedback of actions taken following a disturbance, and their impact (positive or negative) on the system over time are recent features of vulnerability approaches, but require greater emphasis. As noted in Section 3.3.2, resilience thinking highlights the importance of both short- and long-term feedbacks in simultaneously determining resilience for some, while causing emerging vulnerabilities for others. Third, vulnerability approaches tend to favour the social dimension of the social-ecological system over the geophysical domain and, in doing so, downplay the biophysical life support system that sustains development (Folke, 2006; Miller et al., in press). Fourth, the nested representation of scale in recent frameworks, such as the Turner et al. Sustainability Science Framework (2003), is questionable. Both vulnerability and resilience frameworks offer nested and, sometimes, hierarchical interpretations of scale. However, scaled relationships, actions, processes, and the structures within the social dimension of the social-ecological system are more fluid and relational (Howitt, 1993). Even though populations are place-based, constant interactions between different groups (and different agendas within these groups) are relational and play out through networks that stretch across places, countries, and scales, an observation that necessitates an alternate theorisation of scale that captures these dynamics (Rigg et al., 2008; Tan-Mullins et al., 2007). Finally, whilst vulnerability frameworks highlight the importance of context, none go into any detail on how destinations are constructed and contested spaces, and how the agendas and connections of the multiple stakeholders involved in producing and delivering the tourism product influences destination vulnerability levels. The geographical theories of place and relational scale readdress these last two theoretical weaknesses, both of which are introduced in Sections 3.4.5.1 and 3.4.5.2.

3.3.4   *Moving forward in assessing destination vulnerability*

My critical review of the three systems approaches of chaos-complexity theory, resilience, and vulnerability-based approaches, clearly demonstrates that each approach affords valuable contributions for understanding the vulnerability of destination communities. However, none present a complete analytical approach for assessing destination vulnerability. Accordingly, a new and innovative *Destination Sustainability Framework* is

presented in the next section. This framework draws upon the strengths of vulnerability research, advances in sustainability science, innovations from resilience thinking, and the specificity of tourism sector approaches. It also incorporates geographies of place, scale, and time to overcome hierarchical notions of scaled actions and processes that shape destinations, and to fully expose the contextualised root causes and processes that permeate every aspect of the social-ecological system and, in turn, its vulnerability and resilience over time and space.

3.4   The Destination Sustainability Framework

The purpose of the Destination Sustainability Framework (DSF) (Figure 3.9) is to guide the identification of the multiple factors and scale processes that create and perpetuate destination vulnerability, along with the social actors and agendas that drive action and non-action. Highlighting these factors and processes creates entry points for adjustments, change, and transformation. Accordingly, the scope of this analytical framework is on place-based destination populations where vulnerability and resilience is experienced, as opposed to industry-focussed approaches commonly found in the tourism literature (see Section 3.3). I must stress here that a diagram can never truly capture the dynamics of the lived experience. So the DSF is first and foremost a guide to identifying and analysing the multiple possibilities that shape vulnerability, resilience, and change in the social-ecological system of which tourist destinations are a part.

Another point that needs attention before we move on to the DSF itself is related to my choice to design a new vulnerability framework that focuses on the tourism context instead of a more general vulnerability framework. As discussed in Section 2.4.3, the vulnerability of tourism destination and their host communities is under-researched both empirically and theoretically. The aims of my thesis is to fill these two gaps. This focus does not preclude the application of the DSF to different contexts and place-based populations that are not reliant on tourism. This is not the place for a discussion of future framework application possibilities; this is continued in Chapter 8. Therefore attention now turns back to the presentation of the DSF.
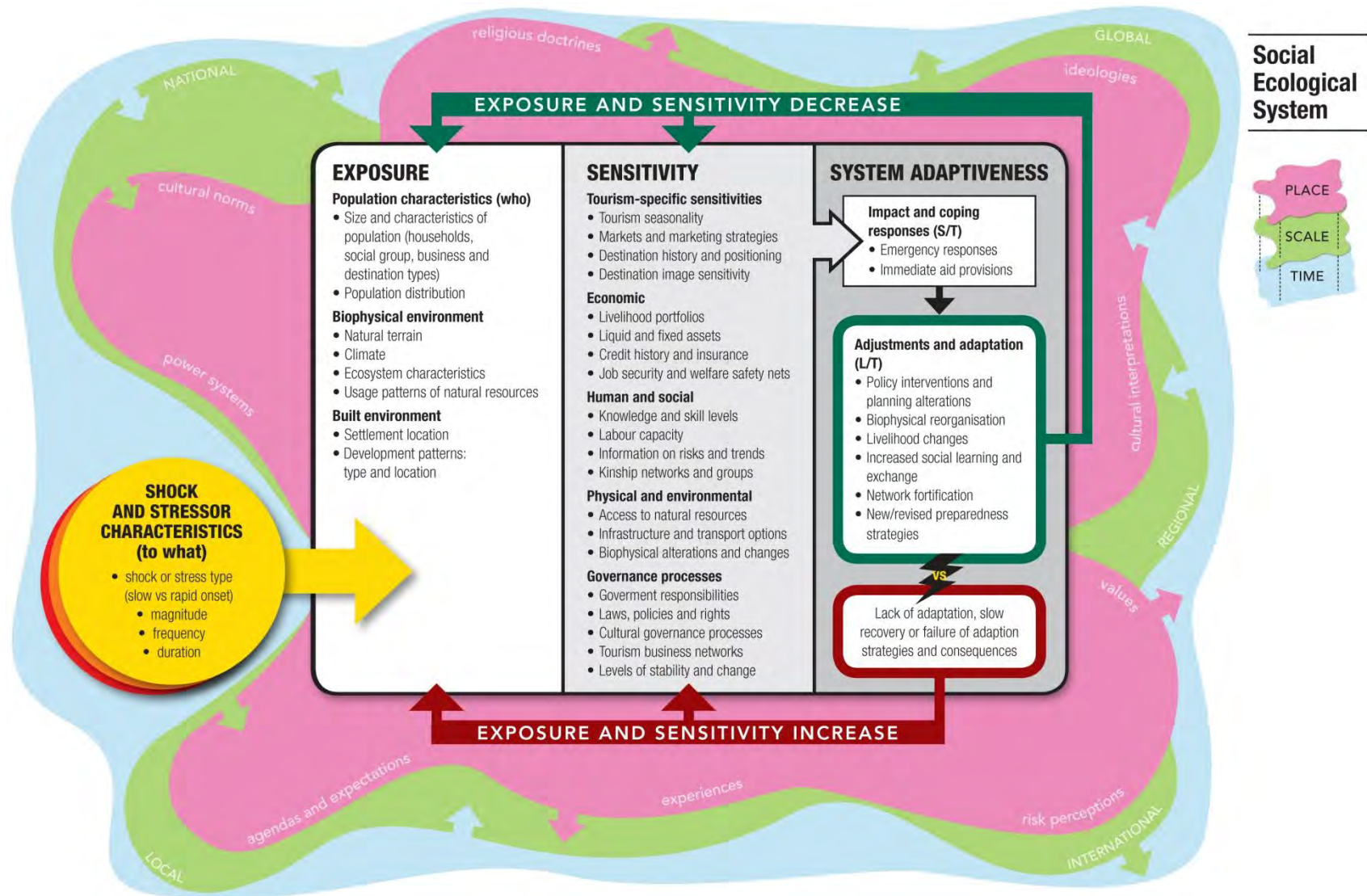
Social Ecological System

PLACE
SCALE
TIME

GLOBAL · NATIONAL · religious doctrines · ideologies · cultural norms · power systems · cultural interpretations · REGIONAL · values · agendas and expectations · experiences · risk perceptions · LOCAL · INTERNATIONAL

EXPOSURE AND SENSITIVITY DECREASE

EXPOSURE

Population characteristics (who)
- Size and characteristics of population (households, social group, business and destination types)
- Population distribution

Biophysical environment
- Natural terrain
- Climate
- Ecosystem characteristics
- Usage patterns of natural resources

Built environment
- Settlement location
- Development patterns: type and location

SENSITIVITY

Tourism-specific sensitivities
- Tourism seasonality
- Markets and marketing strategies
- Destination history and positioning
- Destination image sensitivity

Economic
- Livelihood portfolios
- Liquid and fixed assets
- Credit history and insurance
- Job security and welfare safety nets

Human and social
- Knowledge and skill levels
- Labour capacity
- Information on risks and trends
- Kinship networks and groups

Physical and environmental
- Access to natural resources
- Infrastructure and transport options
- Biophysical alterations and changes

Governance processes
- Goverment responsibilities
- Laws, policies and rights
- Cultural governance processes
- Tourism business networks
- Levels of stability and change

SYSTEM ADAPTIVENESS

Impact and coping responses (S/T)
- Emergency responses
- Immediate aid provisions

Adjustments and adaptation (L/T)
- Policy interventions and planning alterations
- Biophysical reorganisation
- Livelihood changes
- Increased social learning and exchange
- Network fortification
- New/revised preparedness strategies

VS

Lack of adaptation, slow recovery or failure of adaption strategies and consequences

SHOCK AND STRESSOR CHARACTERISTICS (to what)
- shock or stress type (slow vs rapid onset)
  - magnitude
  - frequency
  - duration

EXPOSURE AND SENSITIVITY INCREASE

Figure 3.9: Destination Sustainability Framework (DSF)

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3.4.1 The main elements of the Destination Sustainability Framework

The DSF comprises six main elements: (i) the shock(s) or stressor(s), (ii) the three interconnected dimensions of vulnerability - exposure, sensitivity, and system adaptiveness - that form the core of the DSF, (iii) the dynamic feedback loops that express the multiple outcomes or consequences of actions taken (or not taken) in response to the shock of stressor, (iv) the contextualised root causes and drivers that shape places (including destinations) and their characteristics, (v) the scale, and (vi) multiple timeframes within which social-ecological change occurs. The role of each element in contributing to destination vulnerability and resilience is detailed below.

3.4.2 Shocks and stressors

The event or events that destabilises the existing system is the natural starting point for the analysis of destination vulnerability. The **shocks and stressors** element (to what) is shown as piercing the core of the social-ecological system. The event does not cause vulnerability - it is the trigger event that reveals vulnerability - but the nature of the shock or stressor does influence how the system is affected over space and time (Wisner et al., 2004). Like Turner *et al.* (2003), a distinction is made between shocks and stressors. Shocks are rapid onset events, such as terrorist acts, including bombings, natural hazards (some of which are caused by climatic variability), and health epidemics. These are most likely to be unanticipated events in terms of frequency and size, and possibly in form. This acknowledges that the uncertainty with regard to future events, the form they take, and subsequent impacts, are an integral component of the social-ecological system. Stressors, on the other hand, are slow-onset events that are often manifestations of human-environment interactions, and place increasing pressure on the localised system over time. These include: slow-onset climate changes such as sea-level rise and water shortages, environmental degradation, changes in biophysical elements (the removal of coastal grasses and trees, and alterations to the geological terrain), economic downturns, and changes in travel and product trends. Yet it must be remembered that these shocks and stressors do not occur in isolation. Shocks, stressors, and response failures to both often compound over time to create circumstances that overwhelm the system (Cutter, 2003). As shown in Section 2.2, having to deal with and respond to the compounding impacts of multiple shocks and stressors on tourism flows over time is very much a constant challenge for tourism destinations.

3.4.3 The core interconnected dimensions of vulnerability

Vulnerability is place-specific. Therefore, the three interconnected dimensions of vulnerability form the heart of the DSF: **exposure** and **sensitivity** encapsulates pre-existing environmental, socio-political, and economic conditions, and **system adaptiveness** which incorporates short-term coping responses to a shock or stressor, as well as the long-term adjustments and their consequences. The factors that contribute to exposure, sensitivity, and system adaptiveness are then broken down into commonly used subgroups that reflect the key determinants of the three dimensions. The subgroup headings and listed factors enable the easy identification of key assessment and analytical focal points for practitioners and researchers, although the lists are not exhaustive.

3.4.3.1 Exposure

Exposure is determined greatly by the type of shock and stressor, and the entities under stress (Polsky et al., 2007: 478). Exposure, then, as the first dimension of vulnerability, presents an inventory of the destination‟s defining characteristics including: (i) the population (who are the main stakeholders, involved in the creation and delivery of the tourist product offered in the focus destination), and (ii) the characteristics of both the biophysical and built environment. The focus destination population and their characteristics differs markedly but is made up of the following common sub-groups: households; accommodation providers and staff (small, medium and large); tour operators, travel agencies and guides; support service providers, including spas, beach service providers and localised transport; restaurants, cafés and bars; souvenir and general shops; and localised tourism representative bodies and government departments. Destination characteristics are further moulded by the natural terrain, supporting ecosystems, and the built environment that collectively reflect the perceived tastes of the dominant tourist groups and the localised interpretations of these. Biophysical characteristics (e.g., flat terrain, removal of natural vegetation resulting in erosion, etc.), and development type and patterns (large sea-facing windows or wooden structures, for example) highly affect exposure levels to natural hazards (Dominey-Howes and Papathoma, 2007), climatic changes, and environmental degradation but are probably smaller considerations for economic downturns and negative travel trends.

3.4.3.2 Sensitivity

The sensitivity dimension of the DSF captures the pre-existing economic, social, political, and environmental conditions that can influence the form shocks and stressors may take in destinations, and shape anticipatory and immediate response capabilities to shocks. This involves an exploration of the political economy of access and entitlements to resources and their distribution and use prior to the onset of the shock or before the tipping point of the

stressor is reached. Equally important in determining differential vulnerability and resilience levels in destinations is the mode of production operating in a given system, which influences development histories and the rate of development of destinations, main markets and market exposure, labour rights, governmental regulation over capital, and capital concentration (see McLaughlin and Dietz, 2008; Watts and Bohle, 1993a).

The review of the tourism literature presented in Chapter 2 and summarised in Figure 2.1 identifies 12 factors that heighten destination vulnerability. Half of these factors - image sensitivity to risk, high levels of seasonality, the place-based nature of the tourism product, location of destinations in hazard-prone areas, fluctuating travel choices, and marketing strategies - are directly related to the type of product destinations offer consumers and the mode of production and delivery of that product in the destination. These tourism destination sensitivities feature prominently in the DSF under the sub-heading of *tourism-specific sensitivities* and are represented by the following three factors: tourism seasonality (representing the timing of tourist flows to destinations), markets and marketing strategies (including those of other destinations that are in direct competition), and destination image (acknowledging the impact risk perceptions have on both tourist travel choices and business responses to possible risks). „Markets" here in the context of tourism refers essentially to tourists – their needs and leisure choices, their cultural sensitivities, and the amount of time and money they have available to allocate to travel (McKercher, 1999).

Also included in the *tourism-specific sensitivities* category is destination developmental histories and positioning. The influence of different destination contexts - that include developmental histories and a destination"s positioning within the highly competitive international tourism market - on destination vulnerability is under-researched. The inclusion of *developmental history and positioning* as a linked factor in the DSF enables me to fulfil the second aim of my thesis outlined in Section 1.2, which is to: use this framework to guide a comparative DVA of the tsunami-affected Thai destinations of Khao Lak, Patong, and Phi Phi Don to better understand the complexity of destination vulnerability and its evolution in different places and developmental contexts. The place-specific nature of tourism is not included under the *tourism-specific sensitivities* category because it is considered to be a much broader and complex issue that requires deeper analysis and theoretical attention. For this reason, place as a determinant of destination vulnerability is the sole focus of Section 3.4.5.1.

Listed next are the types of resources needed to help destination communities prepare, cope, and adapt to change, namely economic, social, human, and physical and

environmental capital. Common sources of *economic capital* include livelihood portfolios, the accumulation of liquid and fixed assets, credit histories and insurance, employment opportunities, business stability, and access to welfare safety nets in times of unemployment. *Human capital* includes knowledge (including traditional/historical responses to past shocks and stressors), skills, and labour capacity. High skill levels enable greater employment flexibility if employment opportunities are interrupted, whilst knowledge about trends and risk influences preparedness. *Social capital* embodies networks and connectedness, group membership, relationships, and levels of trust and reciprocity. The importance of social capital in aiding the recovery of destinations following major events such as the Bali bombings in 2002 and 2005 and the 2004 tsunami is well documented (Baker and Coulter, 2007). Kinship networks encourage cohesion, connectedness, reassurance, and stability in times of need. They can also promote greater access to financial capital and power networks. However, social relationships and networks can also foster social exclusion, manifested through dominant power structures and historically-embedded cultural norms (DFID, 1999a).

Finally, the inclusion of *physical capital* and *environmental sensitivities* here acknowledges that social and economic development cannot take place without a functioning life support system (Nelson et al., 2007; Folke, 2008). As noted in Chapter 2, this is particularly pertinent in the context of tourism, as the success of coastal- and mountain-based destinations hinges upon the maintenance of and accessibility to pristine natural environments that are ecologically sensitive. Key factors include access to natural resources, biophysical alterations, the biophysical carrying capacity of a destination‟s natural base, and access to infrastructure and communication systems. Localised infrastructure is important for the effective and sustainable functioning of the destination community, but equally important are the transport links between the supply markets and the destinations.

Understanding differential patterns of access and entitlements to, and usage of these resources. requires an intimate knowledge of governance and power distribution. Governance entails more than the act of governing (Goodwin, 1999); governance moves analysis away from that of government and its control of society and space (a functionalist perspective) to include the ways in which private enterprise, non-government agents, and civil society influence social order (Hubbard et al., 2002; Goodwin, 1999). Here, traditional government structures, policies, and institutions are seen as just one component of the multi-scaled governance systems that shape the politics of daily life (Cannon, 2008; Goodwin, 1999; Hubbard et al., 2002). Governance draws attention to broader issues of power distribution, and the way in which a wide range of institutions and actors negotiate for their

share of space and resources to fulfil their needs and develop their interests, using a series of formal and informal networks and partnerships (Cannon, 2008; Duit and Galaz, 2008; Goodwin, 1999; Hubbard et al., 2002; IFRC, 2004). Within this dynamic arena, "some partnerships may reinforce the prevailing governance structures whilst others may challenge them" (Hubbard et al., 2002: 179). This gives rise to more fundamental questions such as, who has the power to make or influence decisions and why, how are these decisions made, who do these decisions benefit, and how effective are the prevailing partnerships through which actors operate (Goodwin, 1999; IFRC, 2004)?

Governance then is a key determinant of destination vulnerability and resilience as it shapes every aspect of daily life. It determines the allocation of assets and resources (including land acquisitions for development), the usage of those resources (shaped by laws, regulations, and policies), the quality of social protection, education and employment possibilities, people"s rights to express their needs, access to the relevant technical knowledge and preparedness measures, and, in turn, the differential distribution of risk among the population of interest (Cannon, 2008; Goodwin, 1999). In the case of environmental governance, governance systems act as institutional filters, mediating between human actions and biophysical processes (Gitay et al., 2007; Kotchen and Young, 2007), and as such it features prominently in the framework under the sub-heading of **governance processes**.

The importance of understanding the workings of formal government structures that regulate asset distribution and influence preparedness levels is recognised in the framework. Key analysis points include government responsibilities, laws, policies, capacity (human and financial), and respect of rights. The laws that affect the destination run across scales. These include not only local governmental laws and national laws but international laws and tariffs that affect travel i.e. visas, aircraft and airport taxes, and emissions tariffs or other limitations for aircraft. These rules and regulations may affect costs and destination attractiveness, and tourist choices. Included alongside these government structures are cultural (or traditional) governance structures, along with tourism business networks, both of which have the capacity to contest governmental decisions and greatly shape the politics of daily life in any given destination. In some situations social and business networks may be better placed, i.e. have the necessary skills and knowledge, to respond efficiently to disruptive events (Roman et al., under review). Disaster preparedness strategies fall under this category as well, but preparedness is never just a formalised response. Preparedness and adaptive capacity is shaped by past responses to problems and challenges, informed by traditional knowledge and experiences. People are adapting every day to change and this knowledge and pattern of experiences cannot be overlooked or undermined (see Cannon, 2008). Therefore,

knowledge of the relationships between these groups and organisations, an understanding of social rules and compliance to these, and formal and informal approaches to conflict resolution is equally important (Deitz et al., 2003; DFID, 1999b).

3.4.3.3   System Adaptiveness

A household"s or community"s capacity to respond, recover, and adapt to shocks and their consequences depends upon anticipatory actions for preparedness, including resource stockpiling, immediate and short-term coping capacities, followed by longer-term adjustments and adaptations. The final dimension of vulnerability - system adaptiveness - features both the *immediate and short-term coping responses* and *longer-term adjustments*, and acknowledges their subsequent feedbacks. In doing so, the final dimension of vulnerability encapsulates the dynamic and unfolding *process of change* which is clearly expressed through Holling and Gunderson"s (2002) Adaptive Cycle Metaphor (Section 3.3.2), and adopted in Turner *et al.*"s (2003) Sustainability Science Framework (Section 3.3.3).

Impact and coping responses (short-term) to shocks depend on the set of available capital, including the effectiveness of governance structures, levels of preparedness, and capacity to learn at the time of the shock"s impact or breaching of the stressor"s tipping point (Tompkins and Adger, 2004; Villagrán De León, 2006). This important relationship in the adaptive cycle between the accumulation of capital prior to the destabilising event and the utilisation of that capital in the immediate aftermath of the *shock* to help reorganise the system, is depicted in the DSF (Figure 3.9) by the arrow connecting the available capital (*economic, human, social, political, physical, and environmental*) and place-based tourism characteristics grouped in the *sensitivity dimension,* with the *impact and short-term coping responses box* in the *system adaptiveness dimension*. Reactionary by nature, immediate impact responses to shocks include emergency service actions and the provision and distribution of emergency aid. Short-term coping actions that flow on from initial impact responses include financial aid strategies and trauma support. These short-term coping mechanisms then give way to longer-term adjustments and adaptation measures that can involve reflection, self-organisation, social learning, and embracing emerging opportunities for transformation. Intervention at this stage is critical in determining future vulnerability and resilience levels. But in spite of this, positive change is not guaranteed.

3.4.4   Feedback loops

The outcomes of action, inaction, and failed actions (or the combination of all three) taken in the immediate, short- and longer-term phases of the post-event adaptive cycle feed back into the system and determine new levels of exposure and sensitivity to future shocks and stressors (Cunliffe, 2006). The monitoring of the consequences of differential system

feedbacks over time and space is arguably the most important aspect of the adaptive cycle, but often given the least attention (Larsen et al., 2009), as noted is Section 2.4.3. Actions can produce both positive and negative outcomes for different actors. McKercher (1999: 428) stresses that:

> While individuals within the system may be adversely affected by the abrupt change, others will benefit, and, importantly, the system as a whole will continue to operate although possibly in quite a radically different manner.

Interventions that address pre-existing weaknesses in the system, and increase preparedness, social cohesion, learning and exchange can enhance access and entitlements to resources and redress power inequities. This in turn decreases future exposure and sensitivity levels to shocks and stressors and enhances resilience. These positive outcomes are portrayed by the **dark green arrows**. However, adjustments and mitigation strategies are not always possible or wanted. Lack of adaptation and/or the failure of adaptive strategies are a function of institutional capacity and knowledge systems, as well as human agency, involving choices based on perceived likelihood of future risk and the socio-economic cost of implementing and managing strategies. Inaction in the face of adversity and the acceptance of pre-existing limitations merely compounds exposure and sensitivity, and increases vulnerability levels (shown by the **dark red arrows**). The choices of which actions to take (if any), consequent trade-offs between choices, and the competing needs of population sub-groups, as well as their success or failure, are coloured by value systems and dominant ideologies, perceptions of risk and probable gain (socio-political and financial), power system configurations, and human agency. Together, these conditions shape the context of human-environment interaction.

3.4.5   Deconstructing contextual influences that shape destinations and their vulnerability

As noted in Chapter 2, seeing vulnerability as a characteristic of a given location places context at the forefront of vulnerability analysis. Yet context encompasses more than the interaction of biophysical, socio-political, economic, institutional, and technological conditions. Context, and those processes and actions that take place within that context, have spatial and temporal elements. The spatial elements include the **places** where vulnerability and resilience are experienced, and **scales** of social organisation, through which multiple stakeholder actions, reactions, and consequences play out. The element of **time** captures how these interactions, along with the occurrence of multiple shocks, unfold, recognising that these can occur simultaneously but at different temporal speeds. Some processes are quicker than others, engendering multiple rhythms of change in a given place and system. Each of the three interlinked and all encompassing dimensions of **place**, **scale**,

and *time* are depicted as fluid, dynamic, and malleable to demonstrate that each element (like change) is indeterminable and contested.

The fluid pink element of the DSF that encompasses the three dimensions of vulnerability and in part, the shock(s), represents the contextual influences that shape the destination as a *place* and its vulnerability. Understanding the nature of place and destination creation enables the identification of the actors (*who* contributes to vulnerability creation, perpetuation, and resilience) and the causal processes (*why* actions are taken over others) that shape its vulnerability and resilience to shocks. Intricate explorations of place also enable meaningful analysis of the role place-specific differences and personal circumstances play in producing differential vulnerability and resilience levels within and across destinations.

The final two fluid elements of the DSF that encircle and infuse all other elements within the framework represent *scale* (shown in light green) and *time* (shown in light blue). Including these continuous and non-linear elements in the DSF acknowledges that places and their vulnerability and resilience are dynamic and evolve with people‴s choices, and the multiple scaled actions they use to fulfil those choices, outcomes, and persistent cause-and-effect relationships (Adger, 2006; Folke, 2006; Jäger et al., 2007; Smit and Wandel, 2006; Turner et al., 2003). Yet whilst the terms of time, space, and scale are used frequently to capture the dynamism of vulnerability and resilience, their role in shaping vulnerability and change are underexplored and under theorised. The DSF redresses these shortcomings in existing work by deconstructing *place*, *scale*, and *time* through the theoretical lenses of place, relational scale, and geographies of temporality.

3.4.5.1   Tourist destinations as constructed places

As noted in Chapter 2, the carefully constructed tourism destination remains the focal point of the tourism experience, but the production of the product encapsulated in a destination‴s image incorporates multiple businesses and interconnecting network structures and processes operating across and through multiple scales that span the globe (Bærenholdt et al., 2004; Dredge and Jenkins, 2003; Urry, 1990; Urry, 1995). The geographical theory of place provides a theoretical lens through which to define destinations and deconstruct those processes that shape destinations, the scaling of these forces, and the multitude of actors that influence the construction and deliverance of both the destination experience and inevitably its vulnerability.

Places are more than physical locations and politically demarcated spaces. They are dynamic, elastic, and contested landscapes that have multiple identities, meanings, and interpretations dependent upon multiple viewpoints and social-ecological interactions that evolve over space and time (Agnew, 1997; Massey, 1993; Massey, 1994; Pritchard and Morgan, 2000; Young, 1999). Places are subject to constant in-and out-flows of people that colour the landscape with their perceptions, experiences, and preferences (Harrison and Price, 1996). The feelings and opinions of those who interact with that space within any given moment in time tie these processes and events together, culminating in a „sense of place" from which identity of place and its corresponding subjects are derived (Agnew, 1997; Massey, 1994). However, such feelings and opinions that shape the identity of place are highly subjective. Perceptions of place are filtered through a multitude of experiences, judgements, and identities shaped by social interactions that develop over a lifetime. These multiple experiences and perceptions form a multiplicity of place-identities held by different groups, all of which are concurrently associated with the same physical space. Therefore, place cannot be understood without connecting it to places beyond the geographical space in question, each of which is in a constant state of flux (Staeheli, 2003). The uniqueness of place, then, derives from a distinct blend of localised and wider social actions and interactions operating outside a given place, and a historical layering of events particular to that area (Massey, 1993). Yet the creation of place and its definition projected to the outside world is framed by politicised ideologies that inscribe a particular idea of order on the lives of the people who inhabit (but do not build) that space (Cresswell, 1999).

Place, as a socio-political construct comprised of multiple meanings and interpretations by multiple actor interactions, is perfectly demonstrated in the creation of tourist destinations. Tourist places are tangible but fragile constructions (Bærenholdt et al., 2004). The product encapsulated in the tourism destination is a blend of multilayered imaginations that are constructed and defined by tour operators and key destination stakeholders, in accordance with the expectations and desires of the travelling public (Pritchard and Morgan, 2000; Young, 1999). Through this process, places of natural beauty and cultural significance are reinterpreted, reimagined, repackaged, commodified, designed, and marketed (Knox and Marston, 2004; Harrison and Price, 1996). The final result is a manufactured and „physically placed" image and associated experience that is sold to and consumed by the tourist (Nijman, 1999; Shaw and Williams, 2004). The tourist destination becomes the physical expression of the sold experience. The place and the individual experiences it invokes are then reinterpreted by interactions between the destination host community and the travelling public (Ryan, 2002; Shaw and Williams, 2004). Yet the host community themselves are not a homogenous group (Nijman, 1999). Destinations are built upon a high in-migration of

entrepreneurs and workers whose experiences and expectations colour their new home and mould the tourist experience that they deliver to tourists. Identifying who carries out the re-imaging and cultural packaging highlights important power dynamics and decision-making that moulds the product and influences the distribution of costs and benefits amongst development actors, and subsequently differential vulnerability (Knox and Marston, 2004; Shaw and Williams, 2004). This key assertion is reaffirmed by the tourism literature presented in Chapter 2.

One of the key causal factors behind tourism‟s inherent vulnerability is a heavy reliance on the marketing strategies and destination positioning undertaken and controlled largely by outside actors, including national tourism representative bodies and large international tour operators (see Ichinosawa, 2006; Knox and Marston, 2004). This constant imaging and re-imaging of the destination involves constant pushes and pulls in a myriad of directions by international and national tourism operators and tourism marketers (including national marketing bodies like the Tourism Authority of Thailand), the host communities, and the tourists whose needs first shape the tour operators product and their actual experience of the place which then colours their perceptions and influences future needs. These external and internal processes and influences are constantly altering the character of a place; this is reflected in the DSF framework by a series of arrows. Understanding these power dynamics and identifying the agendas that determine the form tourism activity takes in each destination, and tourist flow to those destinations, then is crucial for understanding and addressing destination vulnerability.

The actions of actors involved in the creation of destinations are influenced by multiple factors, including political and economic ideologies, religious doctrines, cultural norms and power systems, values, and perceptions of risk and resultant choices. The resultant agendas and expectations of the both tourism industry stakeholders and the tourists fall within the DSF element of *place*. These contextual influences permeate the fabric of a destination and influence the nature and intensity of disruptive events, actions, reactions, and consequences, and in turn, vulnerability and resilience. They shape governance structures and reinforce dominant ideologies, influence developmental decisions and destination characteristics, determine differential access to resources and their usage, influence business decisions, and shape perceptions of risk and corresponding responses. Ideologies, for example, affect the way we perceive and use our natural resources, a consideration that is particularly pertinent to the tourism context. The West‟s treatment of nature as „other‟ and something to be ruled, dominated, controlled, and altered to support human procreation and expansion (demographically and economically) is rooted in Judaeo-Christian theology

(Brody, 2000; Hall and Page, 2002). This way of thinking has led to the depletion of natural resources and caused massive social-ecological imbalances to which we are now forced to redress where possible, and adapt to where not. In this thesis I endeavour to overcome this artificial divide between society and nature by adopting a systems approach that recognises the intrinsic and inseparable connection between the two.

3.4.5.2 Scale

The spatial component of the DSF is particularly important given that the tourist product may be experienced in the destination, but its production and promotion is often dependent on multiple preferences, decisions, and negotiated actions that take place outside the destination. The hierarchical and nested depictions of scale that are evident in resilience theory (see Holling and Gunderson, 2002) and existing vulnerability frameworks (Turner et al., 2003 is one example) are replaced in the DSF by a fluid and malleable constant (portrayed in light green) to show scale as fluid, dynamic, and relational. This more fluid and malleable representation of scale better reflects the multidimensional and contested social processes and facilitating networks that shape the social-ecological system, and its vulnerability and resilience to shocks and stressors. Relational dynamics of scale are explored here through relational scale theory.

Embedded in geographical theory on spatial organisation, relational scale theory explores the discourse of scale. For Jonas "the language of scale is too powerful to be treated simply as a dimension of spatiality" (1994: 257). Relational scale deconstructs naturalised scales of social organisation - categories of household, local, sub-national, national, regional, global - to reveal the subjectivity of social relations and to explore how social actors simultaneously use multi-scaled social processes and supporting structures to either reinforce the differential access to power and resources within a given society, or to create new landscapes of power, recognition, and opportunity (Ellem, 2002; Herod and Wright, 2002; Howitt, 1993; Sadler and Fagan, 2004). Relational scale does not devalue, deny, or exclude naturalised scales of social organisation, rather, it engages in the politics of scale, revealing it to be an effective social construct through which to exploit and manipulate power and facilitate social action (Jonas, 2006; Marston et al., 2005). Put simply, knowing what social pathways to use, which political buttons to press, and at what scale(s), is crucial in bringing about a favourable outcome.

In the words of Livingston, "To dictate definition is to wield cultural power" (1992: 304). This powerful assertion holds the key to understanding the power of scale in shaping social landscapes. Social power lies with those that define the scale of a given activity or situation,

which concurrently awards power to some while marginalising others. Through the deconstruction of hierarchical scales of power, questions of scalar *definition* (why are certain events labelled as „global" and others „regional" or „local"?), *representation* (who is represented by a given scale?), and the *determining processes* underlying these constructions (who has the power to define scale and how do people benefit from scaling an activity in such a way?) come to the fore. From this post-structuralist perspective, scale in itself is meaningless. It is „who" and „what" scale represents and how it is used that is important. However, for scale to become an effective tool for harnessing social transformation, the given scale of action must gain mutual recognition, accountability, and acceptance by the collective group in a given context (Howitt, 2003).

Seen in this light, scale (like place) is a conditional product of the tensions that exist between structural forces and human agency (Marston, 2000). Social actors simultaneously create and work through multiple scaled structures and processes in order to reinforce or contest the discourses of power that shape their lives (Howitt, 2003). The angle taken by actors depends on their agendas or positionality. Those in power work to reassert and strengthen their positions, whilst the marginalised search for ways to contest existing power dynamics and create new landscapes of power, recognition, and opportunity (Howitt, 2003; Jonas, 2006). The structural components involved in scale creation and manipulation include *social actors* such as the state; non-state political actors such as political activists; industry stakeholders and community representatives; *social structures* including political institutions and social networks; and *social processes* such as the capitalist market (Marston, 2000). The actions taken by actors to better facilitate their access to power and resources are not necessarily directed at one scale; entry points for action can simultaneously exist at multiple scales. The tactical advantage of possessing an explicit understanding of scale when engaging in power relations negotiations cannot be stressed enough (see Adams, 1996; Agnew, 1997; Leitner, 1997). The social actors that recognise this and take advantage of all opportunities, experience greater levels of success in accessing the resources they need to fulfil their goals and agendas (Marston, 2000). From this perspective, scale and scaled actions, relationships, and supporting structures are dynamic and relational, not nested, hierarchical, or privileged. The replacement of hierarchical depictions of scaled social engagement with more dynamic theoretical representations found in relational scale is supported by Tan-Mullins *et al.* who contend that

> The relationships between actors can no longer be easily classified into binary or triangular models. Rather, they require the theorization of a dynamic and fluid interaction between different groups (and different interest profiles within these groups) who may be situated at particular scales but who act or operate across scales (2007: 329).

This continuous manoeuvrability and wrestling over power and resource access through scale, as well as the term"s contextualised meaning, is portrayed in the DSF as multiple arrows pulling and pushing scale - the way it is defined, the way in which activities are scaled, and the multiple ways scale is exploited by social actors.

Scale is a powerful lens through which to explore and act upon change (Jonas, 2006: 404), making it a potent addition to the DSF. Viewing scale as relational enables a deeper analysis of the scaled processes, networks, and relationships social actors use to gain access to the resources they need to fulfil their objectives and agendas. The identification of these constant and contested politicised actions and interactions between social actors also illuminates the processes that create and perpetuate social inequality and differential vulnerabilities within destinations. Finally, the identification of key actors with a vested interest in tourism development, and the multi-scaled structures they work through, provides planners, policy makers, and community members with a clear directive regarding the type of resilience strategies required, the target audience, and the most appropriate scales for policy action and execution.

3.4.5.3   Rhythms of time and change in tourism destinations

Temporality and differential rhythms of change are a fundamental attribute of human-environment systems, the evolution of tourism destinations, and their vulnerability to multiple shocks and stressors (see Adger, 2006; Bærenholdt et al., 2004; Cutter and Finch, 2008). As such *time* and its influence on vulnerability patterns in tourism destination warrants further investigation. Time is often viewed as a fact of life, something we take for granted. Rhythms of nature such as changes between night and day, cyclical seasonal differences along with human transience, and linear conceptualisations of past, present, and future have shaped the way humans view time (Adam, 1990; Lefebvre, 2002; Mels, 2004). But like scale, it is a contextualised social construct used to help order our lives. For Adam, time is not a fact of life but is „implicated in *every* aspect of our lives and imbued with a multitude of meaning" (emphasis taken from the source) (1990: 2). Time is experienced as a constant in our lives but the meanings and values attributed to time are culturally loaded and context-dependant (Adam, 1995). Different perceptions of time are evident when travelling to different regions of the world where daily rhythms and conceptualisations of time and punctuality differ to that at home. Western tourists (including myself) travelling to parts of Africa, for example, quickly become all too familiar with the differences between „Africa-time" (capturing a more relaxed pace of life) and that of the industrialised West where every aspect of our lives is timed and commodified (see Adam, 1995; Lefebvre, 1991), causing much frustration when time-based schedules are broken until cultural perceptions of time are adjusted. In such situations,

perceptions of time in tourism destinations are open for negotiation.

Temporality and multiple layerings of cyclical and linear rhythms of time, along with rhythms of repetition, stability, and change (all aspects of temporality) are fundamental to the immediate experiences of places, landscapes, and tourism destinations (Adam, 1995; Bærenholdt et al., 2004; Mels, 2004). There are temporal rhythms influencing timing of travel (work-time versus leisure time and seasons), rhythms in destination evolution and placement, rhythms dictating business longevity, temporal rhythms of ecological processes and change in destinations (including rapid shocks or longer-term stressors), differential rhythms in experiencing destinations (as a workplace for employers or as a tourist), and rhythms that dictate a sense of place. Tuan (2004) argues that place must stop changing or change very slowly for people to be able to grasp it and have an emotional sense of it. This observation is particularly pertinent in a tourism context, where much attention is given to upholding a desired place-based image (evoking targeted emotional and sensory responses) moulded around an idealised „snap-shot" (Bærenholdt et al., 2004). These targeted emotional responses that are encapsulated in destination imaginings also have a temporal element attached. Coastal destinations are often marketed as slow-paced paradises to escape to (epitomised in the sun, sea, sand product) whilst New York as a city is marketed as fast-paced, the city that never sleeps (Bærenholdt et al., 2004). Yet even „timeless" landscapes are not static. They merely evolve at much slower temporal speeds that may be beyond human observation in light of our own mortality (Adam, 1995; Tuan, 2004). Furthermore, those living in modern post-industrialised societies make a clear distinction between rhythms of work life and leisure time, both of which are commodified (Roberts, 1999; Ross, 1998). This distinction, along with the availability of more leisure-time (with the securing of basic needs), and more money (as societies become wealthier), has changed time-use patterns in post-industrialised societies and allowed for the growth in tourism as a leisure activity (see Gershuny, 2003; Roberts, 1999).

Once time is recognised as a social construct with malleable boundaries, questions of power and control again come to the fore (Adam, 1990; Douglas, 1999). Adam succinctly sums up this relationship:

> Once we ask who structures whose life, what rules are being adhered to, and how these processes occur, then timed social life becomes fundamentally embedded in an understanding of the structural relations of power, normative structures, and the negotiated interactions of social life (1990: 109).

This point is well-illustrated when looking at tourism destination characteristics, and helps to explain some aspects of destination vulnerability. Referring back to Chapter 2, seasonality is

identified as a causal factor of destination vulnerability. Whilst seasonality is a natural rhythm, perceptions and the desirability of seasons and tourist travel time preferences are determined by tourists and tour operators (see Hall and Page, 2002). Flows of tourists and tourism-generated income to destinations in southern Thailand, for example, are dictated largely by the annual seasons in the northern hemisphere (see Sections 4.3.1, 4.3.2 and 4.3.3). Therefore those households and communities highly dependent on seasonal inflows of tourists must plan their lives around uneven flows of income that are out of their control. There could also be another answer here, related to the multiple rhythms that co-exist in the modern world (reflected in both nature and patterns of human social organisation) and our response to those rhythms.

Multiplicities of co-existing and interconnected temporal rhythms are experienced in one place - that of work, leisure, and biophysical rhythms to name a few - and attention to these different rhythms is needed if sustainability is to have a chance (Relph, 2004). For Relph,

> Sustainability is above all a concept about time. It indicates a form of change, whether in ecosystems, economies or cities, that can endure indefinitely. Attitudes toward time, and the forms of change that flows from them, are expressed in cultural landscapes [that encompass the old and new]…Sustainability requires a composed attitude toward time that balances past, present and future in the interests of continuity (2004: 111).

The timing of human activities, as well as the time horizons of stakeholders (short-term versus longer-term outlooks), also determines how a given environment is used and managed (Douglas, 1999; Harper, 2004).

Recognising differences in the rates of multiple changes that occur within the social-ecological system and the timing of those changes (including the existence of overlapping shocks and stressors) is therefore paramount when prioritising risk reduction and resilience building actions to lessen our vulnerability levels to these changes. Global warming presents as a good example of the difficulty of responding to change where the time-scale of the event and its impact is uncertain (Adam, 1995). As noted in Section 2.3 in Chapter 2, people make personal, business, and policy choices based on perceptions of both possible risk and realised events, and acceptable trade-offs that are taken within a greater context of ‚economic and political interests, established habits, national pride and legitimisation‟ (Adam, 1995: 132). Yet invariably the time-frame of the perceived danger is often out of sync with the action-time frames, as the exact timings of disruptive events (be they shocks or stressors) are hard to predict (Adam, 1995). That said, event-timing also influences risk perception and (in)action even when the timing of occurrences are more certain (Dash, 2002; Thomalla and Schmuck, 2004). In their analysis of responses to the 1999 cyclone in India, Dash (2002) and Thomalla and Schmuck (2004) found that past time-cycles of severe cyclones heavily

skewed peoples" perceptions of the timing of future severe events, which prompted people to ignore robust warnings, with dire consequences.

The occurrence of multiple events with unique natural rhythms of varying speeds and intensities, and different social-ecological responses to those differential rates or change, are charted in Holling *et al*"s (2002b) portrayal of panarchies (refer back to Figure 3.3). Sudden change prompts immediate responses within a system whilst slower changes prompt different responses, some of which come too late to avoid irreparable damage to a system"s structure and function. Yet whilst this interlinked depiction of multiple change processes is commended for recognising the temporalities of change and their impacts, I contend that its representation of nested interlinkages between systems fails to capture the existence of overlapping events and processes that co-exist in any given moment, and which require multi-layered responses that unfold at different temporal speeds. Therefore, *time* in the DSF is depicted as a constant but highly variable component of the social-ecological system. Within this temporal sphere there exists a myriad of co-existing shocks and stressors and interlinked responses to these (see Sections 2.2 and 3.4.2). It is impossible to clearly map out all the complexities of time and the temporalities of multiple processes in one framework so a more generalising constant was chosen. There are some specific temporal expressions in the framework, with the acknowledgement of short-term and longer-term responses, but the feedback consequences of multiple actions will play out at different time-scales. Given the complexity of time and the occurrence of multiple temporal processes, temporalities of change and vulnerability is one trait that cannot be presumed or taken for granted.

3.5   Conclusion

Tourism approaches have long engaged in discussions on how best to further the sustainability of tourism activity. But past conceptualisations have been highly tourism-centric, prompting calls to look beyond the tourism system and embrace more holistic systems approaches to better our understanding of destination vulnerability, resilience, and sustainability. Three holistic systems approaches put forward in the literature to achieve this are chaos-complexity theory, resilience thinking, and vulnerability approaches. My critical appraisal of the merits of these theoretical constructs clearly demonstrates that each offers complementary insights into those causal factors and processes that shape destinations and influence their vulnerability and resilience to change, but prove inadequate on their own.

Chaos-complexity theory embraces the dynamism of tourism (social) systems that are characterised by non-linearity, destabilising relationships between competing agents, multiple surprises, disequilibrium, and constant adaptation to change. But it surprisingly

excludes the ecological system. Resilience also embraces the complexity and dynamism of the living system, accepting change as a constant condition. Yet its focus is on the process of change, on ideas that are moulded around observations of ecological systems. The most defining and powerful feature of resilience theory and the Adaptive Cycle Metaphor is its emphasis on consequences of actions following a disturbance; multiple cause and effect relationships that feed back into the system affecting its future forms and adaptive capacity. However, resilience thinking fails to deeply engage in the social dimension of the social-ecological system. Contemporary vulnerability and sustainability science approaches fill this void by recognising vulnerability as a condition of the coupled human-environment system, and emphasising the vital function of power, agency, and access to resources in determining coping and adaptive capacities to shocks over time and space. All three acknowledge the importance of context but do little to fully explore how contextual influences shape all aspects of the social-ecological system.

Informed by these merits and detractors, I have presented a new Destination Sustainability Framework (DSF) that draws upon the strengths of vulnerability research, advances in sustainability science, innovation from resilience theory, and the specificity of tourism sector approaches. Yet the jig-saw of valuable pieces taken from these collection of frameworks and theories was not enough to complete the destination vulnerability picture. Accordingly, the geographical theories of place, relational scale, and time are included to overcome hierarchical and static notions of social actions and processes, to enable a deeper exploration of the underlying socially-embedded contextual influences that shape a destination‟s characteristics, and its vulnerability and resilience over time and space.

In keeping with vulnerability approaches, sustainability science, and resilience thinking, shocks and stressors are recognised as trigger events that destabilise the system. Given that vulnerability is place-specific, the three interconnected dimensions of vulnerability - exposure, sensitivity, and system adaptiveness - lie at the heart of the DSF. Rich detail on those factors and the processes that shape each of the three dimensions is informed by the PAR/Access Model from hazards research and the SL Framework used in development research and practice. The importance of governance in facilitating access and entitlements to resources needed to effectively respond over time is also examined in depth, as are the critical system feedbacks and their differential consequences. However, my biggest contribution to the conceptualisation of destination vulnerability and contemporary vulnerability approaches derives from my deconstruction of naturalised ideas of place, scale, and time, to illuminate the underlying contextualised ideologies, actor agendas, and power systems that infuse and shape every aspect of human interaction with our natural

environment.

Place focuses on the identification of players that construct destinations and the differences of each place, whilst recognising scale as relational highlights exactly how these relationships and networks create and shape the evolution of a place, and its vulnerability and resilience. Finally, the application of geographical theories of time to understanding the evolution of vulnerability and resilience within a system, powerfully demonstrates that the multiple changes and processes that happen simultaneously within a system occur at various temporal speeds, which in turn impacts on response capabilities and choices that become dictated by multiple tradeoffs. This framework is used to guide the comparative DVA of the tourism destinations of Khao Lak, Patong, and Phi Phi Don presented in Chapters 5 to 7 and its success in guiding the assessment and analysis of destination vulnerability is reviewed in Chapter 8, the concluding chapter.

4 Khao Lak, Patong and Phi Phi Don: Dstinations in flux

4.1 Introduction

From the preceding two chapters it is evident that vulnerability and its assessment revolves around three baseline questions - *who* is vulnerable, *what* are they vulnerable to, and *why*? The first half of this chapter answers the first two questions, both of which feature as components of the DSF (Figure 3.9). The reader is introduced to Thailand and the Thai destinations of Khao Lak, Patong, and Phi Phi Don, thereby answering the question of *who is vulnerable*? It explores their core characteristics including their image, their placement as a product in the international tourism market, their main attractions, and the main markets that are attracted to these composite attributes. The developmental histories of the three different destinations is also placed within wider governance processes that shape tourism development and its vulnerabilities in Thailand. The discussion then moves on to describing the tsunami trigger event (answering the question *to what*?) that destabilised the existing socio-ecological systems of which each of the three destinations are a part. The nature of the 2004 Great Sumatra-Andaman Earthquake and the subsequent tsunami are described, as are is the tsunami"s impact on each of the three destination communities, and their subsequent rates of recovery.

The second half of the chapter moves focus away from the destination descriptions and tsunami impacts, focussing instead on to the methods used to collect the rich data required to undertake the comparative destination vulnerability assessment within and across three unique destinations. The research design is presented, along with the reasoning behind the choice of case study analysis as the overarching method, and the inclusion of six complementary methods. In the final part of the chapter, I reflect on the unique challenges of undertaking research in a post-disaster tourism context, a key part of the social research process that is often overlooked. The complex answers of *why* Khao Lak, Patong, and Phi Phi Don were vulnerable to the 2004 tsunami are then presented in Chapter 5 to 7.

4.2 Overview of Thailand

The Kingdom of Thailand (commonly abbreviated to Thailand) covers an area of 514,000km^2 in the centre of the South-East Asian peninsula, and is bordered by Burma, Lao People's Democratic Republic, Cambodia, and Malaysia (Figure 1.2 in Chapter 1) (United Nations Thailand, 2008a). Thailand‟s population of 64 million speak Thai as the official language. Thais are devout Buddhist (95 percent) but religiously tolerant with Muslims, Taoists, Christians, Hindu, and Sikhs making up the remaining five percent (United Nations Thailand, 2008b). With the overthrow of Thailand‟s absolute monarchy in the 1932 Siamese Revolution (or Siamese Coup d'état), Thailand‟s governmental system switched to a constitutional monarchy with a parliamentary democratic system modelled on the Westminster system (Terweil, 2005). His Majesty, King Bhumibol Adulyadej, is the Head of State, whilst the Head of the Royal Thai Government is the Prime Minister of Thailand, currently Abhisit Vejjajiva of the Democrat Party (Prachathipat Party). But the democracy remains weak, with a succession of 18 military coup d‟états taking place since 1932 (seven of which have been successful) and continued political unrest (Abuza, 2006).

Figure 4.1 shows that industry contributes to 44 percent of Thailand‟s total economic activity GDP, with the travel and tourism sector directly contributing to 6.4 percent of GDP (THB579 billion or USD17 billion) alone (CIA, 2009; WTTC, 2008). Other industries include textiles, agricultural processing, beverages, tobacco, cement, light manufacturing, IT hardware, integrated circuits, furniture, plastics, automobiles, tungsten (world's second-largest producer), and tin (world‟s third-largest producer). However, since travel and tourism touches all sectors of the economy, its real economic impact rises to 14.1 percent of GDP reaching a value of THB1,280 billion or USD38 billion (WTTC, 2008). In 2008, 3,911,000 people were employed in the travel and tourism sector, which accounts for 10.6 percent of total employment in Thailand (WTTC, 2008). Tourism economic activity is most dominant in the south of the country; in 2004, 17 percent of Thailand‟s total tourism revenue was generated from the six southern tsunami-affected provinces of Ranong, Phang Nga, Phuket, Krabi, Trang, and Satun (UN, 2005).
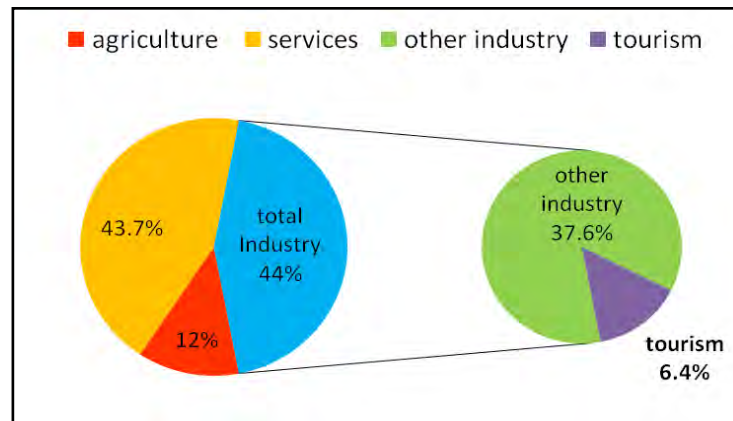
Source: data from CIA (2009) and WTTC (2008).

Figure 4.1: Thailand's GDP composition by sector

4.3 An introduction to Patong, Phi Phi Don, and Khao Lak

The rapid development of Thailand‟s Andaman Coast over the past 30 years has coincided with a strong rise in tourism[146][***]. The destinations of Patong, Phi Phi Don, and Khao Lak, all of which are located along Thailand‟s Andaman Coast (Figure 4.2), are a product of this development. Like most tourism destinations in southern Thailand, these destinations offer experiences that loosely revolve around „sun, sea, and sand‟ and the exoticness of Thailand and the Orient. But the characteristics of each destination, the type of client they attract, and their developmental histories differ greatly. The findings of the comparative DVA presented in Chapters 5, 6, and 7 will show that these differences proved instrumental in determining differential vulnerability levels experienced in each destination.

4.3.1   Patong

Patong is located approximately 867 kilometres south from Bangkok on the central west coast of Phuket, Thailand‟s largest island. The defining geographical feature of this destination is Patong Bay, a deep 14-kilometre long u-shaped bay that opens west out to the Andaman Sea, and its beach (Figure 4.3). Patong is a wide strip of beach that is approximately 3 kilometres long. Surrounding the destination on the remaining three sides is a steep densely-forested escarpment. Much of the tourism development fans out approximately 1.5 kilometres eastward from the beach before reaching the steep rise of the escarpment.

[***] Numbers ranging from 1 to 279 are used throughout the text to denote information obtained from each open-ended interview listed in Appendix 1. Letters A to W used throughout the text denotes information taken from focus group discussions, all of which are detailed in Appendix 3. Refer to Section 4.9 for more details.
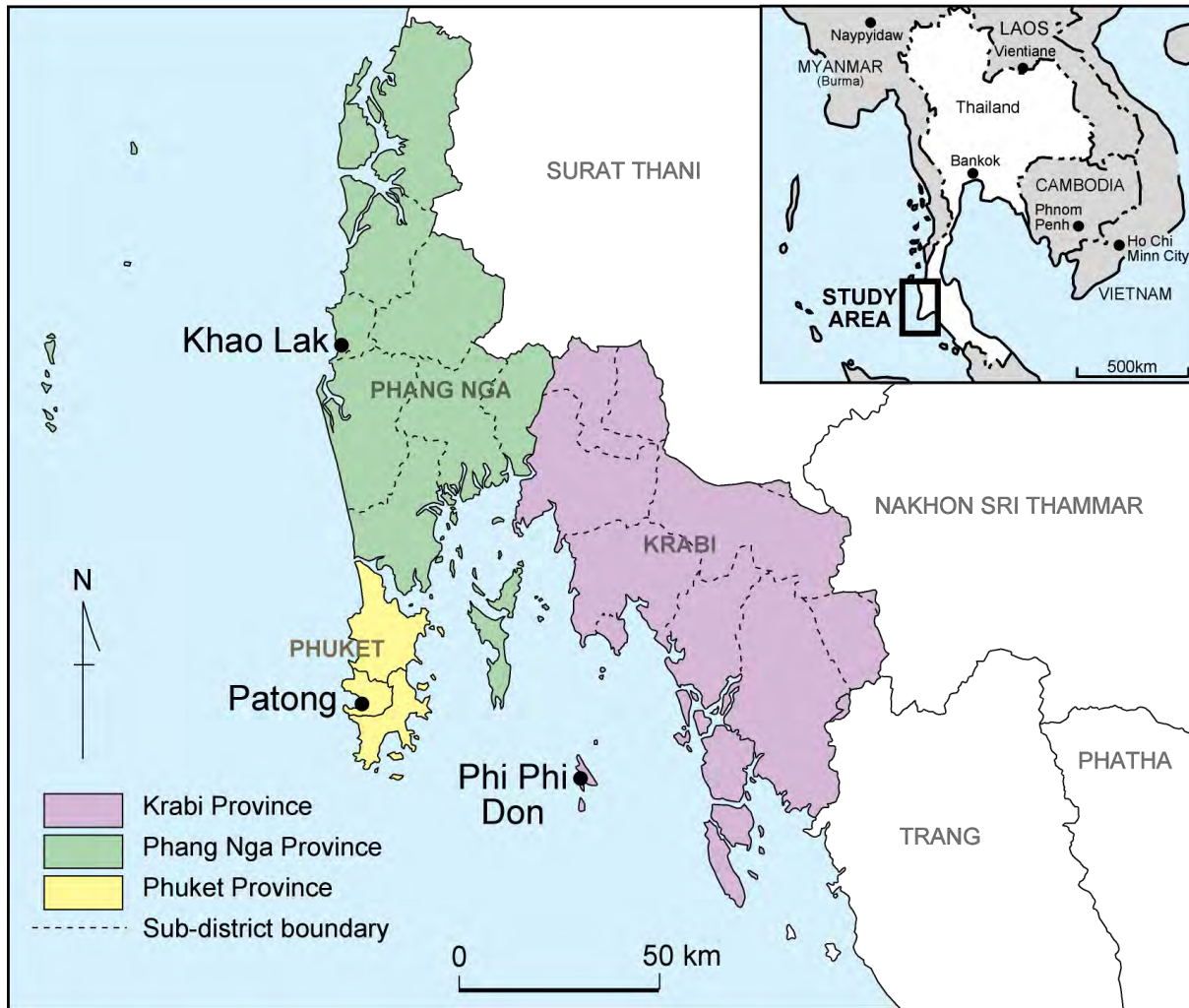
Figure 4.2: Map of Khao Lak, Patong, and Phi Phi Don

Patong is Phuket"s largest destination with a capacity of 9,919 rooms in 193 hotels and guest houses (Rossetto et al., 2006). Some of the main hotels and tourist amenities in Patong are featured in Figure 4.4. The official population of Patong is 16,370 but a large influx of seasonal Thai migrant workers in the high and peak seasons take the population closer to 81,000 (Patong Municipality, 2007). However, Patong started from humble beginnings.

Phuket"s development as a tourist destination began in the 1970s, starting in two small fishing villages called Baan Kathu and Baan Patong situated on Patong Bay, called Baan Kathu and Baan Patong[45] (Cohen, 2008). These two villages have long been swallowed up by the burgeoning development in the area. At this time, tin-mining was the main livelihood source, complemented by subsistence fishing, and palm and rubber plantations[45,56].

Figure 4.3: Location map of Patong
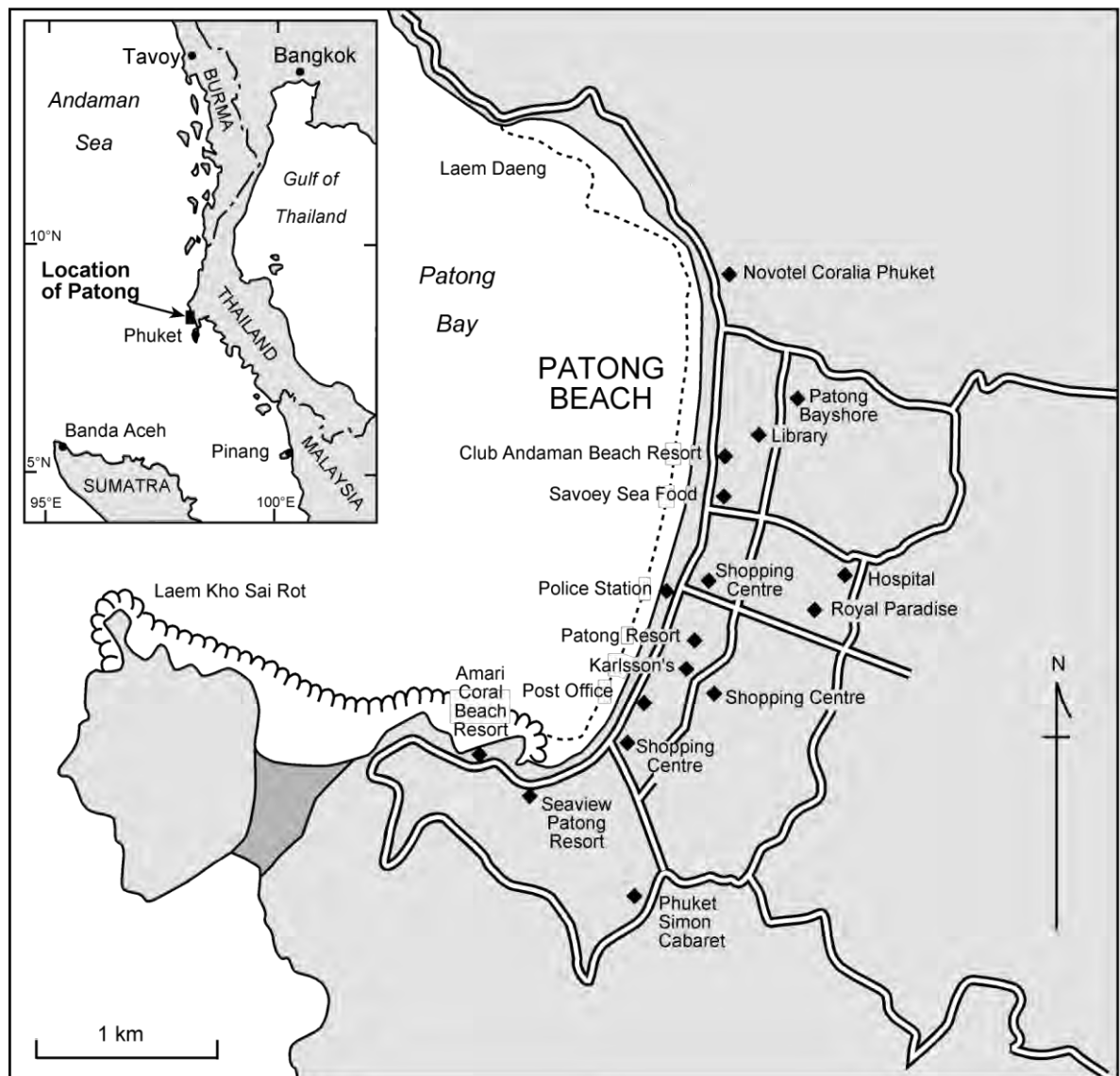
Figure 4.3: Location map of Patong

Mining generated much wealth in Phuket, so when the price of tin decreased this wealth was used to fund the development of a burgeoning destination[45]. Patong"s growth as a tourism destination was boosted by the filming of the James Bond film *The man with the golden gun* (released in 1974) in nearby Phang Nga Bay[45]. The film created exposure to western markets, which in turn, generated investor interest in building hotels to cater to the new demand.

Source: Phuket.net (2009).

Figure 4.4: Simple tourist map of Patong

Other events that further stimulated tourism development in Patong and Phuket were: the first advertising campaign in the late 1970s headed by the slogan "If you get sick and tired of saying Fiji and Bali say Phuket", the opening of Phuket Airport, and the arrival of international flights in the 1980s. The creation of a promotional brochure in the 1980s and the launch of two aggressive Tourism Authority of Thailand (TAT) marketing campaigns "visit Thailand year" and "Amazing Thailand" in 1987 and 1988 respectively furthered international demand[45]. Patong initially attracted backpackers and budget tourists, but as its popularity grew in the early 1990s so did the number of large-scale 5-star hotel investments and high end tourists[45].

Today Patong is the most visited destination on Phuket - the „Pearl of the Andaman Sea‟ - helping Phuket become the wealthiest, busiest, and most visited island and province in Thailand‟s south. It attracts 4.5 million visitors annually (Partnership of Phuket Agencies, 2007; TAT, 2007a; NESDB, 2008), andtourism dominates Phuket‟s economy, generating THB22,000 million (USD560,938,297) per annum (NESDB, 2008). It accounts for 40 percent of Phuket‟s GDP making Phuket the second most important tourism economy in the country behind Bangkok (Birkland et al., 2006a). The hotel and restaurant sector alone accounts for 3.8 percent of Thailand‟s GDP (Birkland et al., 2006a). The tourism and hotel sector in Phuket employ up to 39,394 people or 19.31 percent of the total workforce (NESDB, 2008). Other livelihood options in Patong include agriculture (rubber, coconuts, cashew, tapioca, cacao, rice and pineapples) fishing, pearl farms, shrimp farming, and the processing of fish products (NESDB, 2008). The main attractions in Patong include its bustling nightlife (concentrated along Bangla Road shown in Figure 4.5), cheap shopping at the four surrounding shopping centres, and its beach (Figure 4.6). Favourite beach activities include swimming, sunbathing, and water sports such as jet skiing, windsurfing snorkelling, sailing, and parasailing (TAT, 2007a). Patong also attracts divers that use Patong as a base to access surrounding reefs.

Patong attracts a broad spectrum of markets across the high (November to April) and low season (May to October). The high season attracts visitors from the US, Western Europe (Italy, France, United Kingdom, Germany, and Switzerland), Scandinavia (Finland and Sweden), and, Australia. Asian markets such as Japan, Korea, Hong Kong, and Singapore dominate the low season[116].

Source: Emma Calgaro, February 2007.

Figure 4.5: One of Bangla Road's many bar-filled sois (small streets)

Source: Emma Calgaro, February 2007.

Figure 4.6: Patong Beach and its beach umbrellas

4.3.2 *Phi Phi Don*

Phi Phi Don is located in the Andaman Sea, 42 kilometres off-shore from the mainland of Krabi Province and 48 kilometres from Phuket (see Figure 4.2). Koh Phi Phi Don is one of six islands that form part of the Hat Nopparatthara-Mu/Koh Phi Phi National Park. The Phi Phi Islands were declared part of the Nopparatthara National Park in 1983[234,269]. The other islands include Koh Phi Phi Leh (located directly across from Phi Phi Don), Koh Mai Phai (Bamboo Island), Koh Yung (Mosquito Island), Bida Nok Island, and Bida Nai Island. Phi Phi Don is the only inhabited island and covers 10.25 km^2 (Figure 4.7). The island"s topography is dominated by high limestone mountains covered in tropical forest. The island is almost split into two equal parts by water, the halves only connected by a very narrow isthmus, forming a butterfly shape. Owing to its topography, most of the island"s population and dense tourism infrastructure (hotels, resorts, guest houses, restaurants, shops) is located on this narrow sand isthmus between the twin bays of Tonsai Bay and Loh Dalum Bays (Ioualalen et al., 2007). Figure 4.8 shows the heavily populated sand isthmus that divides Tonsai Bay to the left and Loh Dalum Bay to the right. Some additional hotels are situated on Hat Yao (Long Beach) located south-east of Tonsai Bay and along the north-eastern coast. This dramatic scenery, along with its white beaches and surrounding coral reefs, attracts over 300,000 visitors annually and supports a well-established and thriving tourism business community (Department of Public Works and Town and Country Planning, 2005).

The island has a short developmental history beginning with the establishment of a small Muslim fishing community in the 1940s. More than 80 percent of the resident Thai population remains Muslim (TAO of Ao Nang, 2007). Fishing was supplemented by coconut and cashew nut plantations[238,252,278]. Tourism on the island began in 1975 with the building of a few simple thatched-roof bungalows, called the Cabana by a local family (now known as Phi Phi Islands Cabana Hotel)[211,237,274]. Awareness of Phi Phi Don grew via word-of-mouth, prompting a rise in visitor numbers to the „Emerald of the Andaman" and investor interest from local villagers and mainland investors[273,278] (TAT, 2003). This resulted in a gradual expansion of tourism development activity, ranging from accommodation and support businesses to tourist boat and ferry operations, throughout the 1980s.
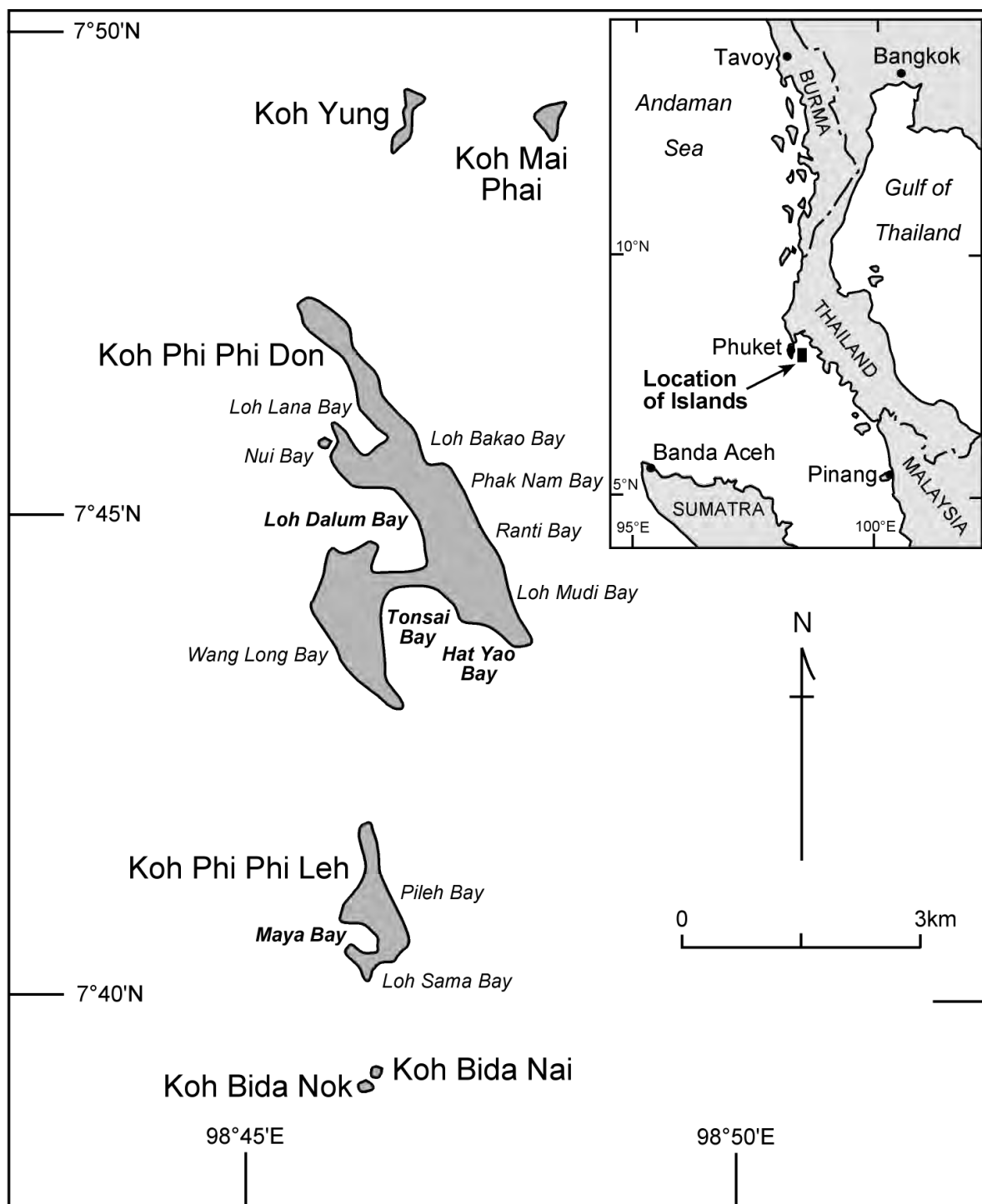
Figure 4.7: Phi Phi Don and surrounding islands included in Koh Phi Phi National Park

Source: Emma Calgaro, April 2007.

Figure 4.8: Phi Phi Don's twin bays surrounded by steep limestone cliffs

As tourism expanded, some local villagers sold their land to investors and moved to the mainland. Those that remained switched their occupation to tourism ventures (Krabi Tourist Association, 2007). Bungalow-based development remained a strong characteristic of Phi Phi Don and its „island paradise" image up until the time of the tsunami when all were destroyed. Such low-key development attracted backpackers and divers[241,278]. By the mid 1990s, Phi Phi Don had developed into the thriving destination whose client-base had expanded to include more mainstream tourists looking for a beach resort experience[237,252,278]. Phi Phi Don"s reputation as an island paradise was sealed in 2000 with the release of the Hollywood film *The Beach*, filmed on location on and around Phi Phi Leh and Phi Phi Leh"s Maya Bay[243,278]. One hotel owner observed that:

> More people came after "The Beach" was released. They want to visit the place in the movie. People come here and ask about the area from the movie[243].

Today, Phi Phi Don has 1160 registered residents[235]. But like Patong high levels of seasonal in-migration bring the population to just over 3000 [235](Department of Public Works and Town and Country Planning, 2005). Tourism is now the main source of income for the island, generating USD113 million per annum in revenue, with 60 percent of this coming from foreign tourists (Department of Public Works and Town and Country Planning, 2005). This accounts for 22.86 percent of Krabi Province"s annual tourism revenue (Department of Public Works and Town and Country Planning, 2005). Phi Phi Don has 79 accommodation establishments in total, 45 of which are hotels and resorts with a room capacity of 1,968 (Department of Revenue, 2006; Department of Revenue, 2007; TAT, 2008a). Supplementary sources of income come from fishing, small-scale farming and making handicrafts from shells[195,198,202].

Phi Phi Don"s main attractions is its natural beauty. It boasts clean white sandy beaches (Figure 4.9), warm turquoise waters, and stunning coral reefs teeming with tropical marine life[203,226,237,241]. Therefore, the two pillars of Phi Phi Don"s market-base are beach-based tourism and diving[237]. The reefs surrounding the islands offer some of the best diving in Thailand making it a diving strong-hold[194,226,237,278]. The popularity of diving around the Phi Phi Islands supports no fewer than 11 dive shops[202] (Department of Revenue, 2006; Department of Revenue, 2007). Other attractions include: day-trips to Phi Phi Leh (host-location for *The Beach*), the Viking Cave (featuring assorted colour drawings including ancient cave paintings that depict long boats resembling those of the Vikings), Koh Phai and Koh Yung (two near-by islands surrounded by off-shore reefs), canoeing on Loh Dalum Bay, and walks to the viewpoint located in the centre of the island offering panoramic views of the surrounds (Krabi Tourist Association, 2007; Tye, 2009). Furthermore, its close proximity to Phuket and Krabi make the Phi Phi Islands as popular day-trip destination, which contributes to food and support services revenue for Phi Phi Don businesses[236,252,278]. Phi Phi Don"s main markets in the high season (November to April) are Europeans. Scandinavians account for 60 percent of the foreign tourists with French, Italians, Germans and British making up the remaining 40 percent (Krabi Tourist Association, 2007). The low season (May to October) is dominated by Asian markets (with a growing demand coming from Korea and China), Australia, and Israel (TAT, 2008a).

Source: Emma Calgaro 2007.

Figure 4.9: Massage bed overlooking Long Beach and Phi Phi Leh in the distance

4.3.3   *Khao Lak*

Khao Lak is located on the west coast of Thailand in the southern province of Phang Nga, approximately 70 kilometres north of Phuket. It is bordered by Khao Lak National Park to the east and Andaman Sea to the west, and encompasses an area stretching from Khao Lak Beach up north just past Laem Pakarang, as shown in Figure 4.10. Much of the tourism development is built on a 12 kilometre strip of flat land that extends up to two kilometres inland to the foot of the bordering escarpment. Khao Lak is made up of seven tourism village hubs (Figure 4.11) beginning with Khao Lak Beach to the south, Nang Thong, Bang Niang, then extending up to Khuk Khak Beach, Laem Pakarang, Pakweep Beach, and Bangsak Beach to the north. However, the heart of the destination is concentrated in Nang Thong and Bang Niang. The population of the greater Khao Lak area is 4,683, with Bang Niang and Nang Thong accounting for 966 and 343 people respectively (Khuk Khak TAO, 2007).
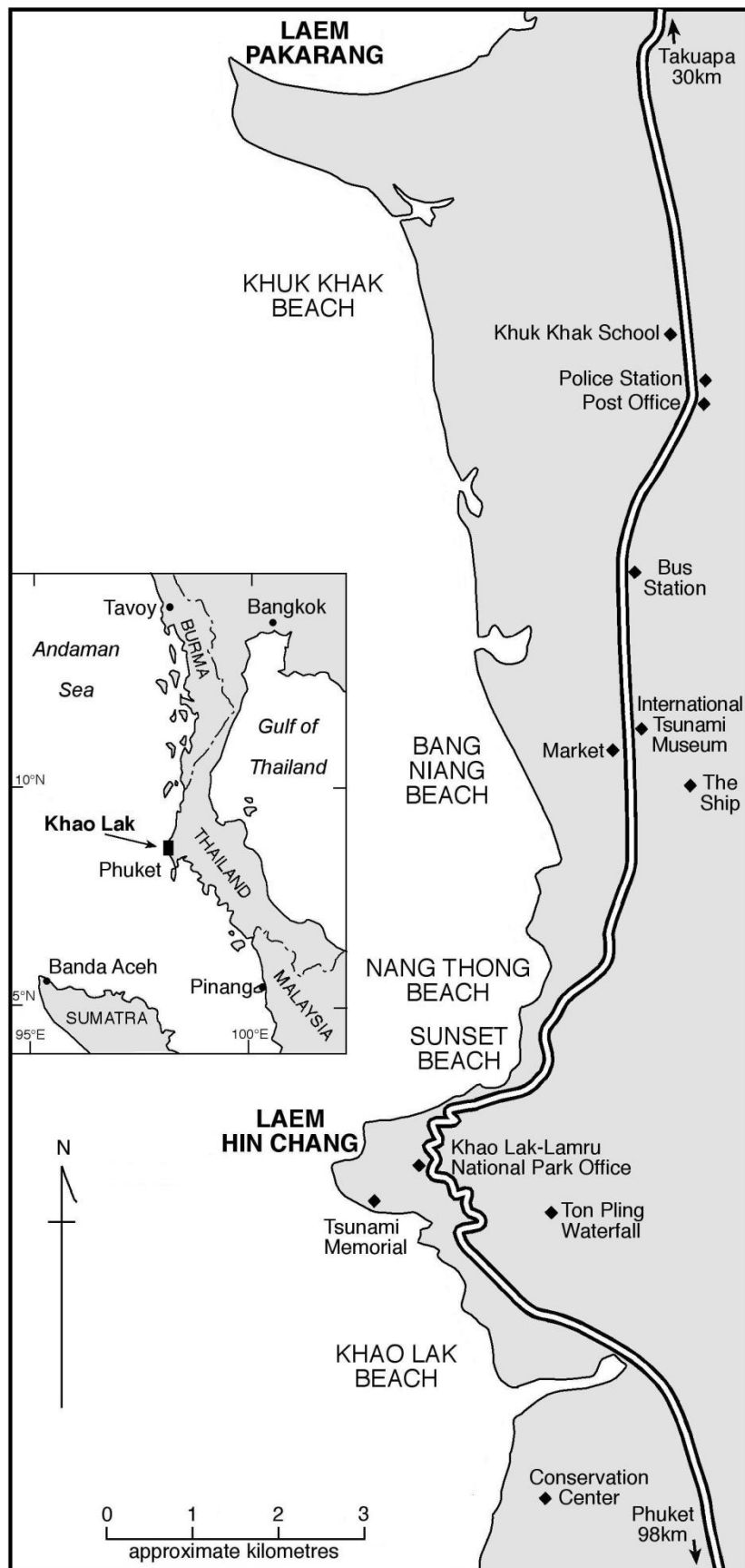
Figure 4.10: Location map of Khao Lak

Figure 4.11: Tourist map showing Khao Lak's village hubs and main tourist amenities

Khao Lak is the youngest destination of the three case study destinations. Tourism has fast become the largest and most lucrative industry in Khao Lak, attracting 321,938 visitors in 2004 when the destination was at the height of its popularity (TAT, 2004). Alternate livelihoods include construction, fishing, and rubber, fruit and palm oil, and fruit plantations, construction, and fishing. Emulating the development patterns of Patong and Phi Phi Don, Khao Lak started from small-scale spot development that began with the building of 10 bungalows on Nang Thong Beach by a German and Thai couple in 1988[18,36]. Khao Lak"s undiscovered charm attracted the German naturalist tourist market seeking new landscapes to explore. However, at this time „Khao Lak" as a place did not exist until 1996 (Calgaro, 2005). The successful marketing launch of Khao Lak"s Laguna Resort in the brochures of two prominent European tour operators (Neckermann Reisen in Germany and Star Tours of Scandinavia) transformed Khao Lak from an undiscovered „sleeping" tourism community to an internationally renowned tourism destination[17,18,20,]. Needing a unique destination profile, the name „Khao Lak" was taken from the mountain that overlooks the valley, and is used by the tour operators to epitomise the tranquil and untouched destination product[18,28]. Prominent and constant exposure in the brochures of Europe"s largest tour operators is responsible for Khao Lak"s exponential growth from 100 rooms in 1996 to 5,312 in December 2004[18,28,49], making it the premier tourist destination in Phang Nga.

Khao Lak"s tourism boom persuaded many people living in the greater Takuapa District to start tourism-related businesses[19,21,25,29,55]. It also attracted business investors from other parts of Thailand, who were looking for opportunities in new destination markets where land and rents were cheaper than more established destinations such as Hua Hin, Koh Samui, Phuket Island, and Phi Phi Don[42,46,56,82,112]. Adding to the list of business owners are some foreigners who came to Khao Lak as travellers and never left[17,28,56,59,65,71]. Tourism development spread to Bang Niang in 1999 and then extended northward to Laem Pakarang, Pakweep Beach and Bangsak Beach. Staffing the new businesses are a mixture of people from Takau Pa District, other Thai provinces, and international workers (legal and illegal) from Europe, South Asia, and Burma. At the time of the tsunami, many businesses were relatively new or in the finishing stages of construction[17,25,26,28].

In contrast to the bustling destination of Patong, Khao Lak is marketed as a peaceful haven for nature lovers who want to relax and dive[18,23]. This distinction is very important to the Khao Lak destination community, who work very hard to protect it[18,20,28,55,71]. The importance of Khao Lak"s unique character and placement within the competitive Thailand destination market to the community is clearly expressed by a Khao Lak resident and worker:

We have no motor boat[s] on the beach. No parasailing, no jet-skis. We don't have red-light, nightlife entertainment districts, no prostitutes. Family tourism, ecotourism… You can't build on the beach, you can't put beach chairs on the beach, you can't have beach vendors on the beach…This is Khao Lak. This is very, very special. It's still a village… It's not mass tourism here…It was the declared goal for Khao Lak to do it different from the beginning. And they're good with it...[W]e have high class tourism here, Khao Lak is one of the high class areas in Thailand…You are part of the locals[71].

There are two types of tourists that are attracted to Khao Lak. The first group are wealthier families and retirees wanting to escape the European winter. The main activities include: swimming and relaxing on the sparsely populated beaches (Figure 4.12), snorkelling, trekking or mountain biking through the mountainous hinterland, elephant treks, adventure tours including rafting and canoeing, and short trips to Phang Nga Bay or Khao Sok National Park. The second group are dive enthusiasts that use Khao Lak as a base for the diving destination of the Similan Islands. Located 80 kilometres from the coast, the Similan Islands are rated amongst the best dive destinations in the world[71,80,86]. The importance of this niche market is well recognised and guarded by the Khao Lak tourism community, who work hard to maintain this distinction[18,71,80,86]. Khao Lak's main markets are largely Eurocentric. Germany and Sweden are Kao Lak's largest markets (31 percent and 15 percent respectively) with the UK, Switzerland and Finland rounding out the top five markets (Figure 4.13). The Asian market is small while Thais only stay in Khao Lak for long weekends and public holiday periods due to the high costs for accommodation[41].

Source: Emma Calgaro 2007.

Figure 4.12: Bang Niang Beach looking south toward Nang Thong Beach
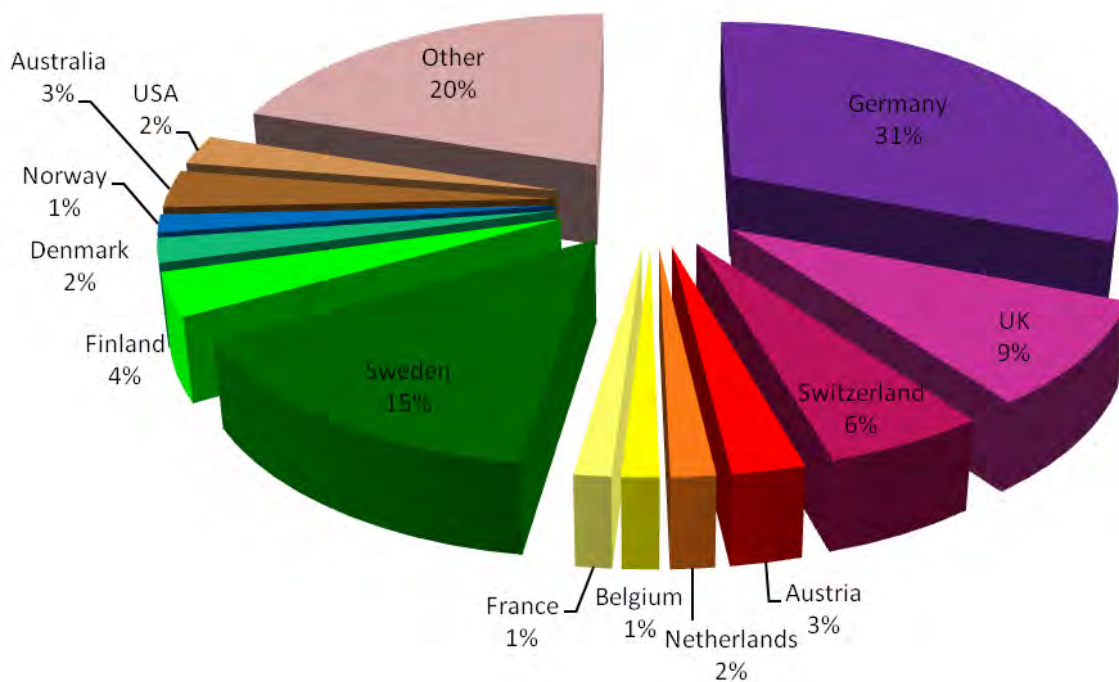
Source: data from TAT (2007b).

Figure 4.13: Main markets in Khao Lak

4.4 Governance structures influencing tourism in Khao Lak, Patong, and Phi Phi Don

The two main groups that influence tourism development in Thailand are the Royal Thai Government (RTG) aided by subordinate levels of government, and the private sector (Leksakundilok, 2004; Smith, 2000c). The close interactions between these parties (Smith, 2000), dictated by access to finances and scaled forums of power, characterises the nature of tourism in Thailand. Figure 4.14 shows the main governmental departments and private sector stakeholders that influence tourism development in Patong, Khao Lak, and Phi Phi Don. The main governmental bodies overseeing the development and promotion of tourism in Thailand, and their main responsibilities, are as follows:

A. **Tourism Authority of Thailand (TAT):** The TAT creates and projects a strong national and domestic tourism image, achieved through constant marketing activities (Higham, 2000; Phayakvichien, 2005).

B. **Ministry of Tourism and Sport (MoTS):** Formed in 2003, the Ministry of Tourism and Sports oversees the direction of tourism policy and planning from the a national level. Its Office of Tourism Development guides policy through the five-year Tourism Development Plans (TDPs) that correspond to the National Economic and Social Development Plans (NESDP) which steer national development (Elliot, 1997; NESDB,

2004; Pupphavesa et al., 2007).

C. **Provincial and local governments[†††]:** The decentralisation of tourism policy structures in 2003 awarded provincial and local governments greater control over design and implementation strategies that match localised needs and resources (Brickshawana, 2003; Phayakvichien, 2005). The provincial governments of Phuket (for Patong), Phang Nga (Khao Lak) and Krabi (Phi Phi Don) tailor central plans to suit localised goals but the responsibility for implementing and managing tourism development lies with sub-district authorities, called Tambon Administration Organisations (TAOs) (Leksakundilok, 2004). Khao Lak falls under the jurisdiction of three TAOs: Bang Muang, Khuk Khak, and Bang Lamkan. Phi Phi Don is locally governed by the Ao Nang TAO located on the mainland. A district officer has also been appointed to reside on Phi Phi Don to ensure that Phi Phi Don is well represented. In Patong, the sub-district authority is the Municipality of Thesaban. Thesaban Tambon was elevated to a Municipality in 2002 to better support the highly populated destination town (Jayamanna, 2007). But their main role is the provision of basic infrastructure such as roads, electricity, water, and waste management (ASIST-AP, 2004). The sub-district authorities also assist with the production of tourism signage, maintaining natural beachside resources, improving English skills, and promoting tourism activities and ecotourism through established networks[34,53] (ASIST-AP, 2004).

Operating within these governmental structures is the private sector that collectively drives tourism development in Thailand[18,28,106,109,146,203] (Leksakundilok, 2004). The private tourism sector consists of three main groups that operate at the international, national, sub-national (regional), and localised destination level. The formal tourism sector, consisting of accommodation providers, inbound and outbound tour operators, local tour operators, travel agencies, and transport companies, specialise in selling core components of the tourism experience. Support businesses, such as photo developing shops, souvenir and clothing shops, restaurants and bars, convenience stores, and health spas and massage parlours, cater for the tourists‟ every day needs and desires. The products and services that these industry practitioners offer to the tourists are determined by the wants and needs of the client and, as with any business, profit margins. Supporting these multi-scaled businesses are numerous tourism industry representative bodies that use the resourcefulness and political connections of their members to influence tourism development (Leksakundilok, 2004).

[†††] The governmental administration of Thailand is divided into 76 provinces. Each province is further divided into districts (*amphoe*) that are then apportioned into sub-districts (*kìng-amphoe*), communes (*tambon*), villages (*mùu-bâan*), sanitation districts (*sùkhǎaphíbaan*), and municipalities (*thêtsàbaan*).

Tourism Governance Structures in Thailand

- Government
  - Ministry of Tourism and Sports
    - Office of the minister in the Ministry of Tourism and Sports
      - Office of Tourism Development
    - Office of the Permanent Secretary for Tourism and Sports
      - Tourism Authority of Thailand (State Enterprise)
        - TAT Southern Office: Phuket, Krabi & Phang Nga
  - Ministry of Interior
    - Department of Local Administrative
      - Provincial Administrative Organisation
        - Tambon Administrative Organisation and Municipality: Patong (P), Ao Nang (K) and Khuk khak (PN)
    - Department of Provincial Administrative
      - The Office of Provincial Governors
        - The Office of District: Kratu (P), Muang Krabi (K) and Takuapa (PN)
- Private Sector
  - National Industry Representative Associations
    - Provincial Tourism Association
      - Destination Business Associations
  - International Resort Chains & Businesses
    - Large & Medium Resorts and Businesses
      - Small Resorts and Businesses

Key:
P – Phuket
K – Krabi
PN – Phang Nga

Key | International | National | Provincial | Local

Source: Calgaro *et al.* (2009a).

Figure 4.14: Governance structures influencing tourism development in Thailand

Influencing both of these structures of governance is a broader collectivist disposition (Paton et al., 2008). Understanding this collectivist context is imperative for grasping the functionality and patterns of governance and action in Thailand. Thailand, like much of Asia, is a collectivist culture that emphasises family, community and oneness with the state, hierarchy, order, and discipline over individualism and liberalism that form the basis of the Western ethos (King, 2008; Irwin, 1996). Focus is on alignment with social norms and maintaining harmony within social relationships, all of which takes place within a broader context of humility and self-depreciation to an established social hierarchy; all Thais regard those around them as either below or above themselves (Hanks, 1975; King, 2008; Paton et al., 2008). These social relationships and networks centre around patron-client relations.

Patron-client relationships are obligatory, yet unequal, arrangements between an individual who has authority, social status, wealth, and access and control over resources (the patron) and another person who benefits from his or her support or influence (the client). Inherited from Thailand"s traditional social order headed by the king, favour and access to sought resources is conferred by patrons to their clients in exchange for loyalty, unquestioned support, and deference that, to helps the patron maintain their position of power (Girling, 1985; King, 2008). These relationships and the societal networks, factions, and cliques that develop from, and around them, can be generated from family, community, or religious connections, and together define informal governance in Thailand (King, 2008).

Governmental decentralisation and a move towards increasing mass participation in political life has solidified localised patronage relationships and networks (Arghiros, 2001; King, 2008). Governance, power structures, and access and entitlement to resources in Thailand"s collectivist society are therefore inextricably intertwined due to the close relationship between family and historically-embedded community leadership structures that increasingly include businessmen-politicians (known as *godfathers* or *jao pho*) (Arghiros, 2001; King, 2008; Irwin, 1996). The positive and negative implications of these linkages on development and destination vulnerability are discussed in Sections 6.6 and 6.7.

4.5 The Great Sumatra-Andaman Earthquake and 2004 tsunami

The previous sections have focused on answering the first baseline question of any vulnerability assessment - *who* (or what) is vulnerable? By doing so, the subjects of the DVA presented in this thesis (the destination host communities of Khao Lak, Patong, and Phi Phi Don) are introduced to the reader. The focus now turns to the second baseline question, being *what* were they vulnerable to? The event in question was the Great Sumatra-Andaman Earthquake and subsequent 2004 Indian Ocean tsunami. The Great Sumatra-Andaman

Earthquake that generated the 2004 tsunami was an event of staggering geological proportions. With a magnitude of M_w 9.3, it ranks as the second largest earthquake in recorded history, the largest being the 1960 M_w 9.5 earthquake in Chile (Kawata et al., 2005; Ioualalen et al., 2007). It had the longest fault rupture ever observed, at an estimated 1200 to 1300 kilometres, and recorded the longest duration of faulting (at least 10 minutes), whilst the aftershocks presented the most vigorous earthquake swarm ever observed (National Science Foundation, 2005a; Norwegian Geotechnical Institute, 2006). Figure 4.15 shows the main shock and subsequent earthquake swarm along the rupture line that runs between the Indo-Australian tectonic plate and the overriding Burma plate. The vertical uplift of the India plate and collapse of the Burma plate caused a vertical difference of up to 8.5 metres in seafloor elevation, that then displaced an estimated 30 km³ of water, forming a tsunami wave that travelled outward from the near north-south alignment of the rupture line (British Geological Survey, 2005; Norwegian Geotechnical Institute, 2006).

Figure 4.16 depicts the vertical modelling of the earthquake induced seabed movement along the India plate and Burma plate boundary (indicated by black dots). Most of the tsunami"s energy was directed in an east-north-easterly direction towards Northern Sumatra and Thailand"s Andaman Coast but the waves reached as far as East Africa (Shuto, 2005). The reason for this lies with the form tsunami waves take in open ocean. Since the entire water column is involved, tsunamis in open oceans have long wave lengths close to 200 kilometres and low trough-to-crest wave amplitudes, allowing the wave to travel long distances across the Indian Ocean without losing much height (RMS, 2006). The Andaman Coast, located only 500 to 600 kilometres from the source, received the full brunt of the tsunami and suffered huge losses.

The earthquake occurred at 7:58:53am local time (00.58 UTC) and the subsequent tsunami train reached the west-coast of Phuket at approximately 9.40am, led by a trough that caused the sea to recede (Bell et al., 2005a; Shuto, 2005; USGS, 2010). Three waves were recorded, beginning with a weaker pre-wave that reached Phuket at approximately 10am (Bell et al., 2005a; Gregg et al., 2006; Ioualalen et al., 2007). ; eyewitnesses in Patong reported a 2-metre high surge that lasted for over an hour following the initial withdrawal of the sea (Ioualalen et al., 2007). The first wave arrived at Khao Lak and Phi Phi Don approximately 25 minutes later (Bell et al., 2005a; Skelton et al., 2008). Yet eyewitnesses reported multiple waves, with the second and third waves being reported as larger than the first pre-wave (Gregg et al., 2006; Skelton et al., 2008). Skelton *et al.* (2008) deduce that such discrepancies could be attributable to difficulties in distinguishing between main and parasitic waves (Skelton et al., 2008).
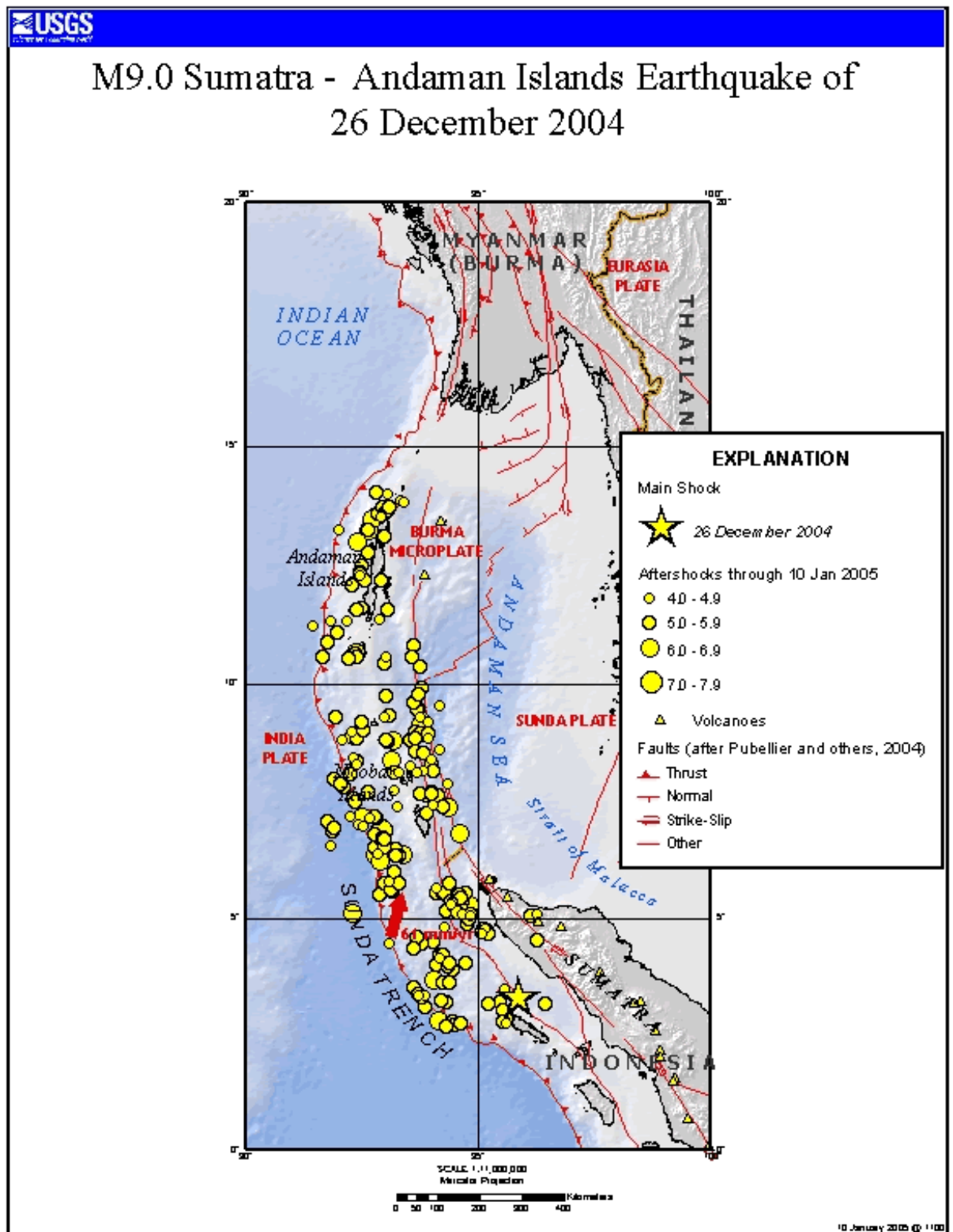
Source: USGS (2010).

Figure 4.15: Great Sumatra-Andaman earthquake rupture line and swarm

The red colouring indicates upward seabed displacement causing a maximum sea-level rise of 5 metres.

The blue colouring shows the downward displacement that caused a 3.5 metre drop in sea-level.

The red dot indicates the epicentre of the earthquake

Source: Norwegian Geotechnical Institute (2006: 5).
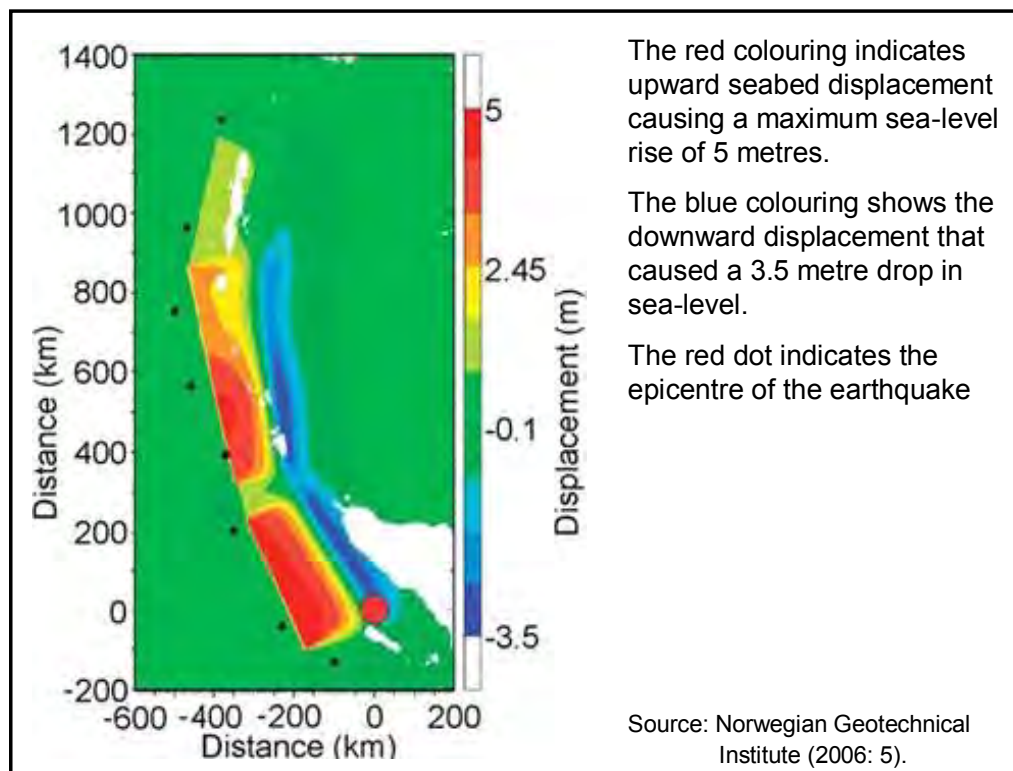
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tsunami reached the Andaman Coastline. But the impact patterns experienced in Khao Lak, Patong, and Phi Phi Don were markedly different due to differences in the natural and built environment.
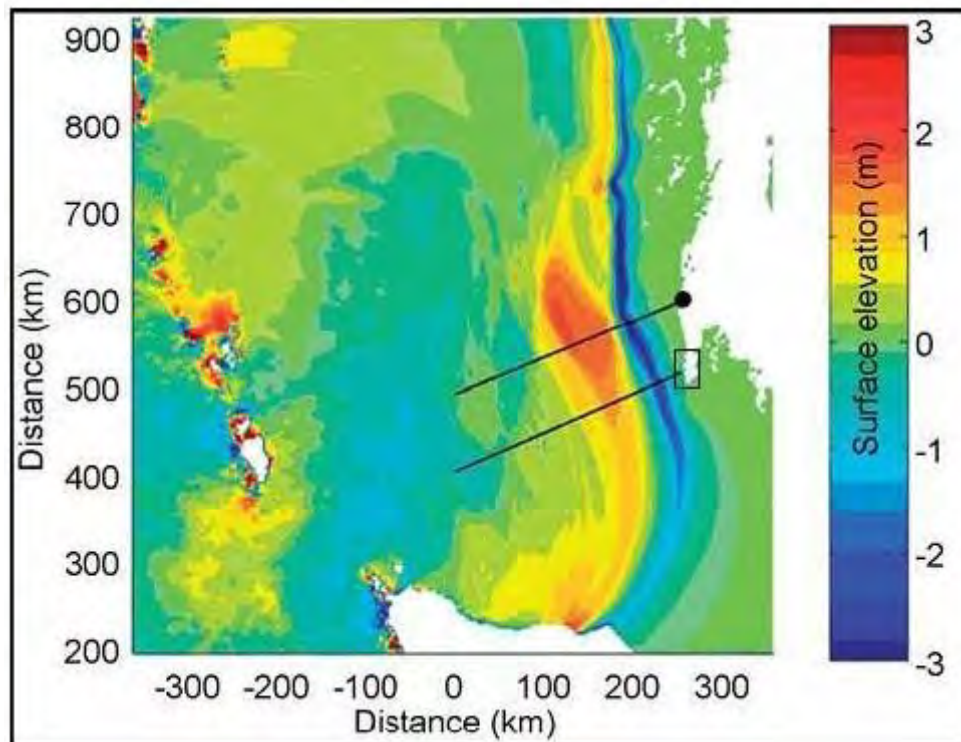
Source: adapted from Norwegian Geotechnical Institute (2006: 7).

Figure 4.17: Tsunami wave pattern and surface elevation as it approached Thailand

4.6 The impact of the 2004 tsunami on Khao Lak, Patong, and Phi Phi Don

The 2004 tsunami disaster transformed the lives and livelihoods of the three Thai destination communities and their guests in the space of a few hours. Patong was the first of the three case study destinations to experience the devastating impact of the tsunami. As noted in Section 4.5, the first tsunami wave reached the western shore of Phuket at approximately 10am (Bell et al., 2005a; Gregg et al., 2006; Ioualalen et al., 2007). Approaching from the west, the tsunami waves struck the first row of development, pushing through the large windows that faced the beach, and extended as much as 800 metres inland via the many small alleyways that run perpendicular to the famous beach[106] (Bell et al., 2005a). Unpublished data suggests that 987 people died in Phuket Province (Jayamanna, 2007). The largest number of deaths occurred at Patong, where a total of 152 persons perished (79 Thai and 73 foreign nationals) (Jayamanna, 2007). Not a single property along the beachfront escaped damage (Ioualalen et al., 2007), yet structural damage to the resorts and support businesses was minimal[106,123]. Approximately 15 percent of Patong"s total room capacity (approximately 1,500 of 9,919 rooms) was damaged[106], which is very low compared to Khao Lak and Phi Phi Don. An estimated 565 micro-business shops were damaged or destroyed

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(Kong-Chant et al., 2005). Lifeline infrastructure was also damaged. Wastewater systems were blocked, water storage ponds were filled with sand and debris, underground electrical grids were submerged, and surface electricity and communication wires destroyed (Jayamanna, 2007). However, the greatest amount of damage was caused by flooding culminating in a total bill of THB46 million (USD1.31 million)[5]. Khao Lak and Phi Phi Don were not so fortunate.

The first of the three observed tsunami waves reached Khao Lak and Phi Phi Don approximately 25 minutes after Patong (Bell et al., 2005a; Skelton et al., 2008). Khao Lak sustained the greatest losses in terms of lives lost and rooms destroyed. The first tsunami wave hit Khao Lak at approximately 10.30am, the largest of which reached a maximum run-up height of 10.62 meters (Warunpitikul and Tangwisutijit, 2005; NGDC, 2009; Mård Karlsson et al., 2009; Skelton et al., 2008). This first wave was preceded by the sea receding at 10.00am, which only drew more tourists to the beach who were curious to see the strange occurrence (Kelman et al., 2008; Mård Karlsson et al., 2009; Skelton et al., 2008). The hotels and bungalows were fully booked for the Khao Lak tourism high season. The waves penetrated as far as 3,500 metres inland, resulting in the destruction of much of the built and natural environment: 5,295 of the 6,369 rooms available in Phang Nga (90 percent of room capacity) were destroyed, resulting in THB20 billion (approximately USD512 million) in damages (TAT, 2005a; ILO, 2005; Katharangsiporn, 2005; TAT, 2005c). The beachside properties in Nang Thong and the whole area of Bang Niang and Laem Pakarang (refer back to Figure 4.11) sustained intense damage, with many properties being completely destroyed. A Thai Navy patrol boat, shown in Figure 4.18, was found to have been washed 1,200 metres inland (Rossetto et al., 2006). It is now a tsunami memorial. Approximately 70 percent of those that died in Thailand were from Phang Nga Province (UN, 2006), 358 of which were tourism staff[87].

Phi Phi Don also sustained horrific losses as a result of the tsunami. The island was struck twice by the oncoming tsunami waves. The first wave struck Loh Dalum Bay from the west, washing over the township. This sequence was immediately replicated with a second wave pushing into Tonsai Bay. The two waves collided in the middle of the strip, creating an inescapable death trap (Ioualalen et al., 2007). The force of the wave picked up and carried people, boats, and debris, leading to the death of 692 people, and directly impacting the lives of a further 3,762 who sustained injuries and property damage (Rigg et al., 2008). Approximately 8,000 to 10,000 people, including tourists were staying on the island at the

Source: Jeff Hock ©2002-2010.

Figure 4.18: Navy ship washed 1,200 metres inland by tsunami in Khao Lak

time (ADB, 2006a). Property damage was extensive. Up to up to 70 percent of the island was severely damaged and 1400 rooms were destroyed (TAT, 2005b). Only eight hotels out of 40 were reported to be operational (ADB, 2006b). Furthermore, 70,000 tons of garbage were left behind on the land and 350,000 tons in the sea (Srisuuksomvong, 2006). Broken coral from the surrounding reefs was strewn all over the centre of the destination village[194,210,226] and low-lying coconut plantations were severely damaged (Srisuuksomvong, 2006).

The destination communities of Patong, Khao Lak, and Phi Phi Don experienced both direct and indirect impacts from the tsunami. Businesses were destroyed, tourist flows dried up, jobs were lost, and the workforce (needed to run newly opened businesses) was severely depleted (UN, 2005; Handmer and Choong, 2006). Those businesses that escaped physical damage suffered a loss of income due to a lack of clientele, depriving them of their primary income source[90,99,133,166,170] (Tan-Mullins et al., 2007). Consequently, thousands of workers were laid off or had their income significantly reduced (UN, 2005). The seemingly localised problem of job and consequent financial losses had a wider knock-on effect; for those family networks spread across Thailand (many of whom live in poorer rural areas) and Burma (see Section 6.6.3) that depended on this additional tourism income that being routinely sent

home to help support the extended family (Handmer and Choong, 2006; Rigg et al., 2008). Support business owners and workers such as masseuses and handicraft sellers lost their customers while thousands of people who lost their formal tourism economy work moved into the informal economy for survival (UN, 2005). This disruption of work patterns and employment had greater consequences in the long-term.

4.7 Post-tsunami recovery levels

Being a longstanding flagship for Thailand"s tourism industry, it was imperative to hasten a quick recovery in Patong. This would not only restore tourist confidence in Thailand as a whole, but revive an important source of Thailand"s GDP[102]. The recovery in Patong was swift. There are two reasons for this. First, as noted in the previous section, Patong experienced minimal damage compared Khao Lak and Phi Phi Don[106]. Second, close collaborations between business, government administrative bodies (at the municipal, provincial and national levels), and the media enabled a rapid change from devastation to functionality within weeks[102,106,109,123]. Basic infrastructure such as electricity, water, and telecommunication was operating normally just four days after the tsunami (Jayamanna, 2007). The clean up and removal of debris from Patong was completed four weeks after the event[71]. The businesses that were located more than 150 metres from the beachfront were operational within days, once basic services were restored, as was Bangla Road, the heart of Patong"s nightlife (Mydans, 2005). Within three weeks of the tsunami, 90 percent of the pre-impact hotel rooms were available and by May 2005, nearly all businesses had reopened[106,143,144,150,157,162,167,170] (Birkland et al., 2006a). Six months after the tsunami, the recovery of infrastructure and the built environment was complete[5,34]. However, tourist flows and business revenue took longer to recover.

In 2005, tourists flows to Phuket dropped 47.63 percent whilst average occupancy rates hovered around 35 to 40 percent between April and December of that year[106] (TAT, 2008c). Two months after the disaster average occupancy across Phuket was down to approximately 10 percent despite the fact that 80 percent of the hotels and businesses were open (Behan, 2005; Sharpley, 2005). Tourism proceeds for Phuket were down by 90 percent in the first quarter of 2005 compared to the year before (ILO, 2005). Tourists from the Europe and Australia were the first to return to Patong, while Asian tourists from China and Korea stayed away from fear of spirits and ghosts (Chuenpagdee, 2005; Vongs, 2006). Tourist numbers improved in 2006[106]. Occupancy rates reached 60 percent in early 2006 and by June hotel occupancy rates in Phuket had climbed to 90 percent as the demand for direct international flights returned (Slayton, 2006). In 2007, occupancy rates reached an annual average of 65 percent representing an increase of 5.13 percent from the previous year (TAT, 2008c; Office

of Tourism Development, 2008c). Total tourist flows into Phuket in 2007 reached 5,005,653 surpassing pre-tsunami figures by 4.4 percent (or 212,401) (TAT, 2008c). In 2008, these numbers reached 5,313,308, 6.15 percent (or 307,655) more than pre-tsunami arrivals (Office of Tourism Development, 2009). The only remaining economic detractor recorded in 2007 were changes in lengths of stay, coupled with lower tourist expenditure levels among both domestic and international tourists, which lowered business profit levels[134,148,155,165,189,M].

The recovery of Phi Phi Don was more modest than Patong, due to the vast differences in destruction levels. Tourist flow levels dropped 86 percent from pre-tsunami levels (TAT, 2008a). Those that did frequent the island were much-welcomed volunteers who had come to help rebuild the island[194,203,226,237,262,273]. Furthermore, the Phi Phi Islands were labelled as a „danger zone" by several international governments including Germany, Japan, and Australia, who warned their citizens not to travel to any tsunami-affected areas[203,237]. Many small business owners that survived chose to cease operating on Phi Phi Don due to the trauma and negativity the tsunami left its wake, which opened new opportunities up for new small business investors[215,216,256]. The rebuilding of businesses was very slow due to delays in finalising new building codes and development plans[278]. Tourist numbers increased throughout 2006 and 2007, rising from 41,979 at the height of the 2005/2006 season to 179,631 in 2006 and then reaching 286,743 in 2007 (TAT, 2008a). The number of accommodation establishments also rose from 20 in 2005, to 34 in 2006 and 45 in 2007 (TAT, 2008a). Occupancy levels in Krabi[‡‡‡] rose from 18 percent in 2005, to 55 percent in 2006 and 57 percent in 2007 (Office of Tourism Development, 2008a; TAT, 2008a). However, despite steady increases in tourist numbers, travel patterns and main markets have altered, as have spending habits.

The length of average stays has dropped from four weeks pre-tsunami to two to three nights (DPTCP, 2005). Shop and souvenir owners and staff also noticed a considerable drop in expenditure on shopping and goods since the tsunami[194,198,199,218,223,263]. Increased accommodation prices since the tsunami leave tourists with less money to spend on longer stays and shopping. The backpacker market - Phi Phi Don"s largest market before the tsunami - also reduced in size due to the increasing cost of accommodation[197,201,203,204,217]. Instead, 2007 and early 2008 showed rises in families and other groups who could afford the higher costs[197,201,203,204,217]. More tourists, particularly Thais and Chinese, are also coming to the island for day trips frequenting the island between 11am to 4pm before returning to Phuket or Krabi in the late afternoon[188,189,198,205,216]. These changes in travel patterns and markets are not wholly detrimental. Souvenir shops and restaurants (including those

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[‡‡‡] Comparative figures for Phi Phi Don are unavailable. Accordingly, Krabi Province figures are used as a guide.

belonging to the large resorts) gain income from the day-trippers[278]. The largest impact has been felt by the dive operators and small tour operators. The dive operators lost considerable business due to lower tourist numbers (caused by accommodation shortages and consequent higher prices) whilst localised tour operators lost day-tripper business to mainland operators that who include a Phi Phi Don excursion in their pre-packaged tours from Krabi or Phuket[194].

The recovery process in Khao Lak was slower than in Patong and Phi Phi Don. The first year was the hardest, as tourist numbers in Phang Nga dropped 71.63 percent (to 821,263 tourists) from the previous year"s highs of 2,894,652 (TAT, 2008b). The Phang Nga Tourist Association (PNTA) estimates that tourism revenues for 2005 were at best, a mere 20 percent of those the year before (ILO, 2005). Throughout 2005 business was buoyed by the large numbers of volunteers who needed food and a bed, and by loyal repeat clients who wanted to support the community through the generation of much-needed business[19,23,71,97]. The rebuilding of individual businesses was undertaken in stages, regulated by the availability of funds and increasing tourist flows[36,55,76,77,80,83,86]. However, ownership of resorts and businesses (of all sizes) has changed as people grappled with trauma and monetary flow issues – for some the trauma was too great to come back and instead they chose instead to relocate[28,50,59,65,70] (Rigg et al., 2008; TAT, 2006b). This is particularly the case in Bang Niang, Khuk Khak, and Laem Pakarang, where the greatest losses were sustained.

An examination of changes in room capacity, overall tourism flows, and average occupancy rates in Khao Lak provides insights into the speed and pattern of rebuilding. Increases in tourist numbers have been modest. Tourist numbers to Phang Nga[§§§] increased by 24.38 percent in 2006 (to 1,021,448) and rose another 13.62 percent in 2007, bringing total tourist numbers to 1,160,535, 60 percent less than pre-tsunami tourist numbers (TAT, 2008b). In 2008, tourist numbers increased to 1,342,971, 53.6 percent lower than pre-tsunami levels (Office of Tourism Development, 2009). Only 800 rooms out of the 5,312 rooms available prior to the tsunami were available for occupation by the beginning of the 2005/2006 high season (ILO, 2006), with that number steadily growing each year. As of April 2008, room numbers in Khao Lak had reached 3,225[49]. While occupancy rates are climbing toward pre-tsunami levels, they are yet to fully recover despite there being 2078 fewer rooms physically available in Khao Lak as of April 2008. Maximum occupancy rates in the high season of 2003/2004 reached 80.11 percent (TAT, 2008b). This dropped down to an average of 24 percent in the first quarter of 2005 (TAT, 2008b). The high seasons of 2005/2006 and

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[§§§] Comparative figures for Khao Lak are unavailable. Accordingly, Phang Nga Province figures are used as a guide given that Khao Lak is the largest tourist destination in the province.

2006/2007 recorded significant jumps in occupancy rates with 61.24 percent and 65.42 percent respectively, but remain considerably lower than pre-tsunami levels (Office of Tourism Development, 2008b).

The recovery of the various villages that make up Khao Lak has differed greatly. Nang Thong‟s recovery has been more rapid than Bang Niang, Khuk Khak, and Laem Pakarang (see Figure 4.10 for locations) due to its longer developmental history and its greater financial stability (see Sections 6.2.4 for more detail). The tsunami had a considerable impact upon Bang Niang. In the once green and popular destination landscape many buildings, old and new, remain empty (Figure 4.19). The many small family bungalow enterprises that once filled the inner roads of Bang Niang struggled to rebuild due to problems in accessing financial credit[17,25,28,50]. Others who survived the tsunami could not return due to the trauma that resulted from the event[17,28,50]. Large pieces of land in Bang Niang and Khuk Khak remain empty and barren with „for sale‟ signs up (Figure 4.20) as the recovery continues. Comparative observations of business activity made in January and September 2007 by the author revealed that new businesses that had opened for the 2006/2007 high season have already closed, a testament to the village‟s heightened vulnerability (field diary, January and September 2007). Some business owners have moved their businesses and houses away from the low-lying coastal plain, and these plots are slowly being bought up by larger investors for larger-scale development. This is changing the Bang Niang tourist landscape and many of the smaller business owners are afraid that Bang Niang will lose its low-key and localised appeal[20,28,59].

Laem Pakarang was the worst affected area of Khao Lak where run-up heights reached up to 10.6 metres and pushed as far as two kilometres inland (see Section 5.2). As of September 2007, the majority of the large resorts that lined Laem Pakarang‟s beach were still under construction. Some sit dormant as owners contemplate the viability of a tourism revival[79] while others, such as the Blue Village, might never be rebuilt due to the high death toll amounted here (TAT, 2006b). Dive operators have regained much of their pre-tsunami business but other support businesses, such as tailors, are not faring as well due to their heavy reliance on strong high-end tourist flows[79,81,82,86]. However, some community members

Source: Emma Calgaro, January 2007.

Figure 4.19: Heavily damaged beach-side resorts at Bang Niang Beach remain untouched

Source: Emma Calgaro, January 2007.

Figure 4.20: 'For sale signs' litter the Bang Niang Beach landscape

were very optimistic about Khao Lak"s future[21,25,50,71,80]. In the words of one German employee:

> Tourism will come back and this [is] a big, big relief. The tin mining … has gone. What do we have? There is no big industry. So you rely on rubber tapping, fishing and that"s it? Tourism is the biggest [industry] … This is the future for us[71].

Tour operator charter flights and room allocations rose for the 2008/2009 Andaman Coast high season. This buoyed confidence levels within the Khao Lak community, prompting hopes of a return to pre-tsunami capacity and occupancy levels by the 2009/2010 high season[19,71,55].

So far this chapter has focussed on answering two of the three baseline questions that lie at the heart of every vulnerability assessment: *who* is vulnerable (the tsunami-affected tourism destinations of Khao Lak, Patong, and Phi Phi Don) and *to what* (2004 Great Sumatra-Andaman Earthquake and subsequent tsunami)? The chapter now moves focus away from the tsunami event and its impact on the three above-mentioned Thai destinations, to consider the methods used to collect the rich data required to undertake the comparative destination vulnerability assessment. The following sections outline the methods I used in the DVA, the reasons behind these choices, and the challenges I faced in undertaking my research in the post-disaster context.

4.8 Using case study analysis to assess destination vulnerability

Case study analysis was chosen as the overarching method for ascertaining *why* there were differences in impact levels, rates of recovery, and vulnerability within and across the Thai destinations of Khao Lak, Patong, and Phi Phi Don. Case study analysis has come to dominate vulnerability assessment based on its capacity to deconstruct and explain complex and place-based phenomena within its real life setting (Dobson, 2001; Kitchin and Tate, 2000; Kyburz-Graber, 2004; Yin, 2008). This focus suits destination vulnerability assessments, as both vulnerability and tourism destinations are socially-constructed and place-based. Explanatory case studies are also compatible with critical realist philosophies (Dobson, 2001) adopted here in this thesis (Section 3.2) as they are designed to explore the *underlying truth* of a phenomenon that is grounded in an *experienced reality*. The added advantage of comparative case studies is that they enable the identification of both the commonalities and the contextualised place-specific differences that influence different patterns of vulnerability in destination communities.

The three case study areas were selected based on (i) the level of damage sustained from the tsunami, (ii) the destinations developmental histories, and (iii) the variable stages of recovery achieved. As discussed in the previous sections, Khao Lak, Phi Phi Don, and Patong cover the full spectrum in terms of developmental histories and damage sustained. As noted in Section 4.6, Khao Lak is the youngest destination and was the worst affected destination in Thailand, losing 90 percent of the built environment, whilst Patong is one of the oldest destinations in Thailand and suffered the least damage (15 percent destroyed), with Phi Phi Don falling between these two extremes in terms of both developmental history (established in the mid-1970s) and damage sustained (70 percent of the built environment). From a damages perspective, Khao Lak and Phi Phi Don were natural choices for the case study assessments given that they were the worst affected destinations in Thailand (TAT, 2005a). Patong, however, was only the fourth worst affected destination after Kamala Beach (see Srivichai et al., 2005), a destination that is located just north of Patong on Phuket Island. But the deciding factor in choosing Patong was its long developmental history; tourism development on Phuket began in Patong in the early 1970s[45]. The choice of three destinations at different stages of development provided an opportunity to explore the relationship between development levels, destination placement and popularity, sustained damage resulting from the tsunami event, and vulnerability. It also enabled deeper explorations into the uniqueness of place and personal circumstances in influencing destination vulnerability (see Rigg et al., 2005). The following sections outline the methods used in the research design.

4.9 Overview of case study methods and analysis

Six complementary methods were included in the case study research strategy to identify those causal factors and processes that led to the differential levels of destination vulnerability and resilience, and rates of recovery experienced in Khao Lak, Patong, and Phi Phi Don. The methods included: document and map analysis, exploratory literature review, field observation, open-ended interviews, case histories, and focus group discussions (FGDs). Using multiple methods is common practice when undertaking case study analysis as they ensure that multiple perspectives are captured, which together form a holistic representation of the phenomenon being studied (Kyburz-Graber, 2004).

The methods were chosen based on three criteria: (i) their capacity to deconstruct the multiple drivers of destination vulnerability as identified in conceptual framework (the DSF presented in Chapter 3); (ii) human resources available; and (iii) time constraints. Qualitative methods were chosen as the main data sources over quantitative methods because the in-depth data collected through these methods enables the researcher to better understand

how the world is constructed and the complexities of human behaviour and social phenomena (Guba and Lincoln, 1994; McLeod, 2001; Silverman, 2001). For Guba and Lincoln (1994), human behaviour cannot be understood without exploring the meanings and agendas that are attached to human action, and qualitative methods capture this richness. Qualitative research methods also lend themselves to reflexive engagement, encouraged by critical realism approaches (Section 3.2), because they yield holistic information that explains *how* processes unfold and *why* (Hesse-Biber and Leavy, 2006; Jessop, 2005; Steinmetz 1998). Quantitative data including statistics on tourist flows, business numbers, and population data, were taken from secondary sources and reviewed as part of the document analysis due to time constraints. The advantages of the three main field-based methods (open-ended interviews, case histories, and FGDs) in deconstructing destination vulnerability along with timeframes and research staff involved are detailed in Appendix A, B, and C respectively.

The DSF was instrumental in guiding the research design. It helped identify the type of data needed to complete the comparative DVA including: (i) baseline information needed on the affected destinations to ascertain *who* was vulnerable and *to what*, and (ii) the questions used in the interviews, case histories, and focus group discussions that would help answer the most important question in a vulnerability assessment - *why*. The research was undertaken in two phases and broken down into 11 tasks that are summarised in Figure 4.21. Phase 1 comprised of desk-based research and included an exploratory literature review and document and map analysis. The bulk of this analysis was undertaken over an 18 month period between March 2006 and September 2007. The exploratory literature review and document and map analysis provided information on: population statistics, tourist flow numbers, business numbers, damage sustained in each destination site, and institutional responses to the tsunami. Information gained through the document analysis also created foundational knowledge pertaining to the underlying causes of destination vulnerability. Supplementary documents including new building regulations and recovery plans, were collected throughout the second phase of research undertaken in the field.

Phase two of the research was field-based and ran over a total period of 4.5 months. The length of time in the field was dictated by budgetary constraints. Open-ended interviews, case histories, field observation, and FGDs garnered in-depth knowledge on: (i) the developmental histories of each destination, (ii) the causal factors driving vulnerability in the affected destination communities and the relationships that existed between them, and (iii) the role social actors and governance processes played in influencing vulnerability levels and recovery rates. This phase also provided insights into possible resilience buildings strategies.
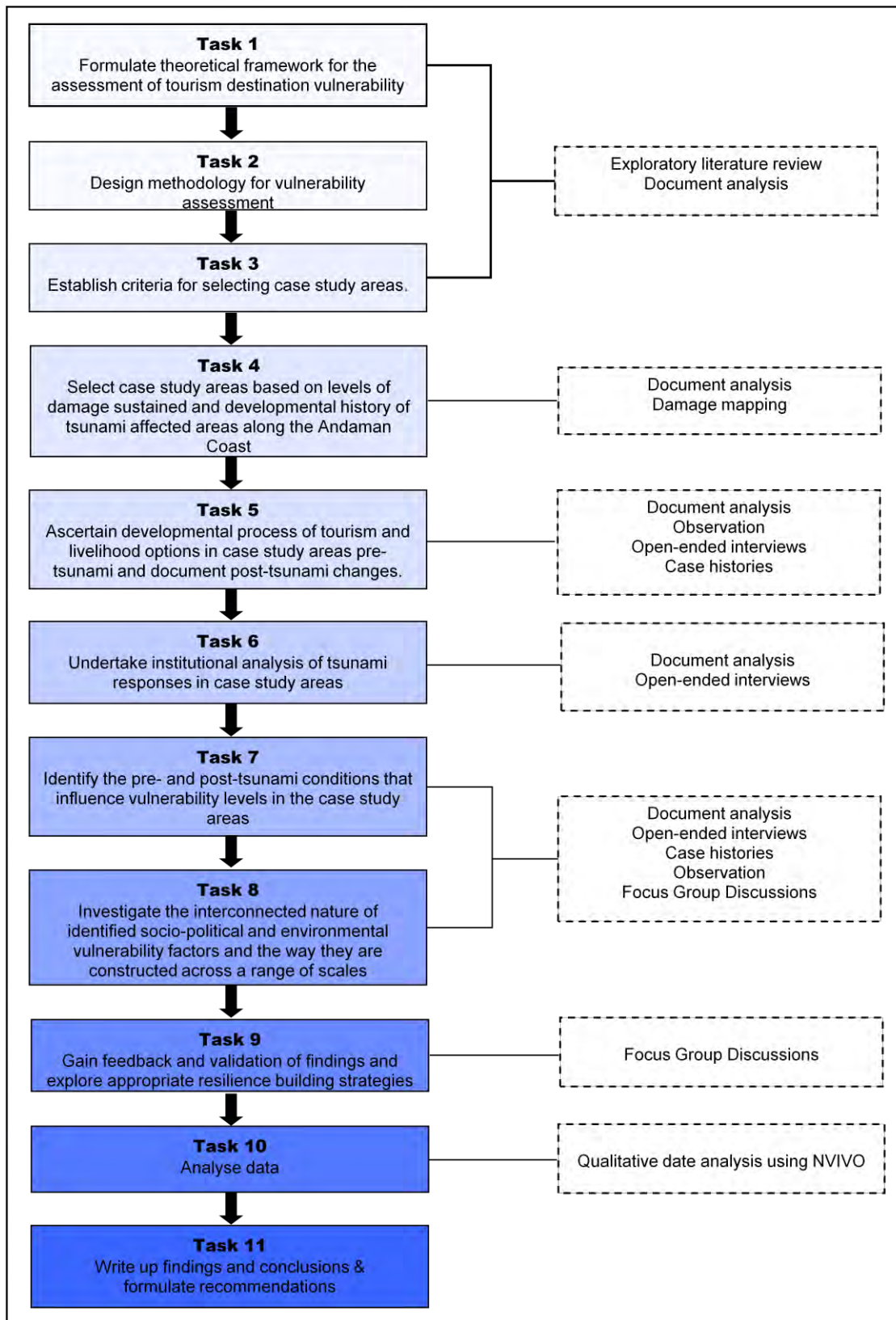
Source: Calgaro *et al.* (2009a).

Figure 4.21: Research design for assessing differential destination vulnerability

The open-ended interviews and case histories, the main sources of data for the DVA, were undertaken between January and April 2007. The desire to get a rounded representative sample (a minimum of 3 interviews) across all major stakeholder groups listed in Tables A1, A2, and A3 in Appendix A took the required target of interviews close to 300, a feat we achieved (see Appendix A for more detail). A minimum of three interviews from the identified groups was set for each destination based on expected reasonable coverage of experiences within and across the destination sites (Quinn Patton, 1990).Given the time constraints and the target number of interviews, the interview schedule was very tight and intense, necessitating an average of two interviews per day for each researcher. Whilst most interviews took place between January and April 2007, some subsequent interviews were undertaken later in that year to ascertain the outcomes of post-tsunami planning strategies and destination recovery levels. Each interview participant was given a pseudonym in the form of a number between 1 to 279 to ensure anonymity (Dunn, 2005). The details and positions of each of the 279 interview participants is listed in Table A4 in Appendix A. These numbers are used throughout the text to denote the source of the corresponding information. The FGDs (23 in total) took place in September 2007 once preliminary results from the open-ended interviews had been completed. This enabled the research team to give feedback to the participants and clarify initial findings. The rationale for including FGDs in the research design, and details on their composition, management, and the data collection techniques employed in the FGDs are extensively discussed in Appendix C. Letters A to W are used throughout the text to denote information obtained from each of the FGDs as outlined in Appendix C.

Field observation complemented the rich data gained through the interviews, case histories, and FGDs, as it allowed me as the researcher to observe events in the destination, and to better understand the relationships between key stakeholders (Kitchin and Tate, 2000; Wolcott, 1995). This in turn enabled me to gain a contextualised understanding (Kearns, 2000) of the destinations as places and the interrelationships that shape the characteristics of the community and, in turn, their vulnerability and resilience to shocks and stressors. The purpose and deployment of each method is summarised in Table 4.1.

The fieldwork for the PhD and SEI comparative DVA (refer back to Section 1.3 in Chapter 1) was undertaken by myself in partnership with my Thai SEI colleagues Kannapa Pongponrat and Sopon Naruchaikusol, with the collection of data being divided equally between all three members of the research team (see Table A4 in Appendix A). However, I, as the principle investigator for the DVA (Work Package 1) in SEI's *Sustainable Recovery and Resilience Building Strategies in the Tourism Industry* project, was responsible for deciding on which

methods to include in the research design, with input from my Thai colleagues to ensure relevance to the Thai context. The only exception to this was the design of the methods used in the focus group discussions, which was done by Kannapa Pongponrat with input from myself and Sopon Naruchaikusol.

Given the large number of open-ended interviews that were undertaken, the data from these was largely paraphrased to save time. Those interviews that developed into case histories were transcribed to capture the rich detail supplied by the participants. The analysis and presentation of the collected data was intimately guided by the conceptual framework presented in Chapter 3. The three dimensions of vulnerability that feature in the DSF - exposure, sensitivity, and system adaptiveness – and the sub-components of each of these dimensions were used as headings, under which the paraphrased data was categorised, ready for analysis. These same headings were also used to code the data. The large data set was then analysed using NVivo, a qualitative analysis software package.

Computer-aided qualitative data analysis software programs like Nvivo have many uses (see Bazeley, 2007; van Hoven and Poelman, 2003; Weitzman, 2000). But I used Nvivo in three ways. First, Nvivo was used to assist me in grouping the data under pre-determined headings or „nodes", which enabled me to retrieve all relevant data quickly, ready for manual analysis (see Dunn, 2005; Weitzman, 2000). Nvivo and the nodes I created to replicate my framework sub-sections effectively became my electronic filing cabinet. Second, NVivo"s memo function enabled me to write reflective commentaries on some various aspects of the data as I paraphrased and transcribed my interviews (QSR International, 2006; Weitzman, 2000). These commentaries were then used as a basis for deeper analysis (Weitzman, 2000). Finally, I used NVivo to undertake text searches to help me locate specific information and the participant sources for that information (QSR International, 2006). These spot-checks were most useful in the final stages of the analysis when informational gaps appeared and needed filling.

The empirical findings presented in Chapters 5, 6, and 7 are also structured in accordance with the three dimensions of vulnerability - exposure, sensitivity, and system adaptiveness – that lie at the core of the DSF (Figure 3.9 in Chapter 3). This enables a more structured and clear presentation of a complex and multi-dimensional phenomenon, where causal factors and processes are intricately linked.

Table 4.1: Methods summary

Method	Purpose	Sources, Participants and Deployment	Timeframe	References
Exploratory Literature Review	a) Inform theoretical framework and research strategy b) Establish criteria for selecting case study sites c) Provide an overview of the factors and processes that heighten vulnerability in beach destination community both pre- and post-tsunami d) Shape and inform the interview questions and structure	SOURCES: ▪ The vulnerability and risk literature sourced from food security and development, climate change, risk and natural hazards, political ecology and anthropology ▪ Tourism literature on sustainability, vulnerability, disasters, climate change, political unrest ▪ Development studies literature on sustainable livelihoods particularly the DFID SL Framework ▪ Human Geography (geographical theories of place, relational scale and time) and Tourism Studies literature focussing on sustainability and destination vulnerability	MARCH 2006 - SEPT 2007	Flowerdew (1997); Neuman (2000); Winchester (2005).
Document and Map Analysis	a) Identify the most appropriate case study sites based on level of damage sustained (including natural environment and physical infrastructure, economic losses and tourism flows declines) b) Ascertain developmental history of Khao Lak, Patong and Phi Phi Don c) Shape and inform the interview questions and structure d) Identify stakeholder participants e) Provide an overview of the factors and processes that heighten vulnerability in destination communities both pre- and post-tsunami f) Ascertain institutional responses to the tsunami in case study areas	SOURCES: ▪ Tourism Authority of Thailand (TAT) press releases and statistics detailing destination hotel capacity and tourism flows and recovery strategies and implementation updates ▪ Government summaries and reports detailing government assessments, responses and updates ▪ Non-Governmental Organisation (NGO) Reports detailing institutional responses and operational procedures; these included: recovery and rebuilding plans, NGO operational frameworks and reports on short-term recovery plans and long-term resilience building strategies ▪ Maps of damage sustained and destination tourist maps detailing business types and distribution ▪ Newspaper articles and websites	MARCH 2006 - SEPT 2007	Clark (1997); Creswell (2009); Hoggart *et al.* (2002); Kearns (2000); Neuman (2000); Winchester (2005).
Field Observation	a) Identify main tourism stakeholder groups plus types and amounts of businesses in each case study destination b) Observe changes in the physical landscape from 2005 (Calgaro, 2005) to January and September 2007 c) Gain contextual understanding of Khao Lak, Patong, and Phi Phi Don as destinations d) Gain an understanding of interrelationships between different stakeholders in the post-tsunami environment	SOURCES: ▪ Observation in the host communities DEPLOYMENT: ▪ Observations were carried out through the fieldwork period during interviews, community meetings, and when surveying area for damage and choosing participants ▪ Observations were recorded on a daily basis in fieldwork diaries and in photographs	JAN-APRIL 2007 & SEPT 2007	Brockington and Sullivan (2003); Corti (1993); Kearns (2000); May (2001); Neuman (2000).
Open-ended Interviews	a) Establish developmental process of tourism in each case study destination pre-tsunami and document post-tsunami changes b) Ascertain institutional responses to the tsunami in each destination c) Identify the pre- and post-tsunami conditions that influence vulnerability levels in Khao Lak, Patong and Phi Phi Don d) Investigate the interconnected nature of identified socio-political and environmental factors and the way they are constructed across a range of scales	PARTICIPANTS: The 279 participants[a] span the spectrum of stakeholders that influence and contribute to tourism development in each case study destination, as well as those playing a role in the recovery: ▪ Private sector ▪ Public sector ▪ NGOs assisting with the local recovery DEPLOYMENT: Participants were chosen using hotel listings, tourism stakeholder listings provided by NGOs working in each destination, snowballing techniques and random sampling guided by map and field observations	JAN-APRIL 2007	Brockington and Sullivan (2003); Cresswell (2009); Dunn (2005); May (2001); Valentine (1997); Winchester (2005).
Case Histories	a) Establish developmental process of tourism in each case study destination pre-tsunami and document post-tsunami changes b) Ascertain institutional responses to the tsunami in Khao Lak, Patong, and Phi Phi Don c) Identify the pre- and post-tsunami conditions that influence vulnerability levels in each destination d) Investigate the interconnected nature of identified socio-political and environmental factors and the way they are constructed across a range of scales	PARTICIPANTS: The 31 case histories[b] were undertaken with: ▪ Founding and long-term members of each case study destination tourism community ▪ Key informants who are active in the governance of Khao Lak, Patong & Phi Phi Don and/or belong to minorities ▪ Random stakeholders who embraced the opportunity to talk in length about their experiences DEPLOYMENT: Participants were chosen using snowballing techniques and random sampling	JAN-APRIL 2007	Brockington and Sullivan (2003); Dunn (2005); George and Stratford (2005); May (2001).
Focus Group Discussions (FGDs)	a) Ascertain livelihood options pre- and post-tsunami b) Identify the pre- and post-tsunami conditions that influence vulnerability levels in each case study destination c) Investigate the interconnected nature of identified socio-political and environmental vulnerability factors and the way they are constructed across a range of scales d) Gain feedback on preliminary findings e) Explore community-led solutions to building capacity and resilience	PARTICIPANTS: The stakeholder groups included in the 23 FGDs[c] were chosen from the private sector stakeholder groupings used to guide the interview sampling. They represent dominant stakeholder groups and existing informal stakeholder collectives. DEPLOYMENT: ▪ Participants were chosen from the interviewee lists and using snowballing techniques ▪ Methods used included: Situation Assessments of problems, solutions and their ranked importance; Rich Picture Diagrams to understand cause and effects of identified problems; and resilience building goals	SEPT 2007	Cameron (2005); Goss and Leinbach (1996); Hesse-Biber and Leavy (2006); Kitzinger (1994).

a A summary of the objectives, design and implementation of the Open-ended interviews is included in Appendix A. Numbers 1 to 279 are used throughout the text denotes information obtained from each interview as outlined in Appendix A.
b A summary of the case history participants is included in Appendix B
c A summary of the FGD groups and the methods used is included in Appendix C. Letters A to W used throughout the text denotes information obtained from the FGDs as outlined in Appendix C.

Yet research design only explains part of the research process. Insights gained from *doing* research proved just as important in shaping who I am as researcher, my perceptions of my topic and the communities I was researching, my ethical role in undertaking social research, and the findings I produced. For critical realists like myself, the process of constant and critical reflection on our own *situated interpretations* of the world and what *exists* in that tangible and external world, collectively determines what can *be known* about that world (see Section 3.2). Accordingly, the remainder of this chapter reflects on the experiences gained through the undertaking of vulnerability research in a post-disaster tourism setting and, the challenges I faced.

4.10 Research implementation challenges

The process of fieldwork as a human geography PhD student, who is learning the ropes, so to speak, cannot be more humanising. Research design aside, the process of operationalising a tight research strategy in a post-disaster tourism setting presents specific and unexpected challenges. Awareness of ethics, research rigour, and positionality are heightened when undertaking research in a new cultural setting, where unfamiliar social norms, interactions, and meaning causes a fundamental shift in the perceptions of the issue at hand, the participants, and self (Murray and Overton, 2003). Challenges in undertaking social research are magnified in a post-disaster setting (Rigg et al., 2005; Tan-Mullins et al., 2007) where researchers are faced with highly stressful, hazardous, uncertain, and sometimes dangerous situations (Hilhorst and Jansen, 2005; Stallings, 2002). The methods used in disaster research are not unique but the *context* of post-disaster research is (Stallings, 2002). This section reflects on the challenges that were experienced throughout the research process, most of which were experienced during the 4.5 months of fieldwork in Thailand. But the first challenge surprisingly arose during the first phase of the research that preceded the fieldwork, namely the document analysis.

4.10.1 Conflicting and incomplete data on tsunami impacts and destination characteristics

One of my first tasks in undertaking research on the 2004 tsunami was to provide an outline of the tsunami"s impact on affected populations. However, it was difficult to access consistent statistical data on the impact of the tsunami on the affected regions and destinations, the number of businesses in each destination pre and post-tsunami, and fluctuations in room capacity, occupancy rates and annual tourism flow numbers to particular destinations. Data on the impacts of the tsunami (including final counts on lives lost and economic losses) were often contradictory. This included data presented from different United Nation departments. Differences in timeframes within which the data was collected is one explanatory factor for

these discrepancies. Gaining access to information on tourist flow numbers to particular destinations as well as occupancy rates, and room capacity proved difficult because the Tourism Authority of Thailand (TAT) that is responsible for providing tourism statistics only publically releases detailed statistics on each province instead of per destination. Accessing this data became harder from 2008 onwards when the TAT stopped publicising these statistics altogether. To overcome this obstacle, alternate sources were explored and data sought were possible. Where no data was available on destinations, provincial statistics and data provided by interview participants were used to provide the reader with some indication of tourist activity trends.

4.10.2 Time is money: seasonality and availability

The interviews were conducted between January and mid-April 2007, constituting the high season in Thailand. Accordingly, people were busy with clients and many did not have time or want to take the time out to participate in the interviews. This problem was most noticeable in Patong and to a lesser extent Phi Phi Don, where demand had returned to pre-tsunami levels. Cancellations and interview rescheduling was a very common experience. This was problematic as it caused delays in the interviewing schedule and placed additional pressure on the research team to find more interview participants for that particular day.

Our research schedule was very tight, having set targets to undertake approximately 90 open-ended interviews in the three weeks that was budgeted for each destination. To fulfil this target, each of the three member team was required to complete an average of two interviews per day. Undertaking those 90 interviews would enable us to have fulfilled our target of three interviews per main stakeholder group identified for each destination (see Tables A1, A2 and A3 in Appendix A), enabling us to feel confident that the opinions gained were diverse enough to make informed comparisons across the three destinations. Moreover, the rescheduling of an interview did not guarantee that it would take place. Interviews were often rescheduled more than once and in some cases cancelled outright. A lack of time was often given as the reason behind the cancellation. But on reflection, these cancellations may also have been due to the participants not wanting to „lose face" – an important characteristic among collectivist cultures like Thailand – by refusing interviews when asked in person. Grief and an unwillingness to talk about and revisit the traumatic event may also have been a determining factor, but there is no way to confirm either of these points.

The cancellation of interviews were not such an issue in Khao Lak where large sections of tourism infrastructure remained in ruins and tourism numbers remained low. That said, the

undertaking of FGDs in Khao Lak proved difficult in September 2007 as many tourism businesses were still closed for the low season. This problem was particularly acute among western business owners, many of whom return to their home countries for the low season[28,50,59]. Here email was used as a medium for double-checking information with key Khao Lak informants who were absent. Another reason for FGD schedule changes in Khao Lak was a tsunami scare prompted by the occurrence of an earthquake, with an magnitude of 8.5, that took occured off the southern coast of Sumatra on 12 September 2007 (USGS, 2009). News of the threat came via international news channels, causing many Khao Lak residents to run to higher ground for safety (author's field observations, Montague, 2007). Our research team, that was undertaking FGDs in Khao Lak at the time, received an unofficial warning from a personal friend of one of our team members, who worked for Thailand‟s National Disaster Warning Centre (NDWC). No official warning eventuated as the tsunami threat to Thailand was low. Nonetheless, on the following day many of our FGD participants scheduled to participate were still up on the escarpment (that surrounds Khao Lak on three sides) and were too afraid to return to the coastal destination villages.

4.10.3 Language barriers

Language barriers are a common cross-cultural research challenge (see Murray and Overton, 2003). Learning the language spoken in the region or country is an obvious way to resolve this issue but it is very time consuming and I lacked the time to learn more than basic Thai phrases to better facilitate basic interaction. Our multi-cultural research team overcame this challenge by dividing the interviews up based on participant English language skills. Undertaking research in the westernised tourism destination setting also helped. Many of the tourism workers and business owners possessed a basic fluency in English, making it possible for me to interview them without an interpreter. Participants that were unable or felt uncomfortable speaking English were interviewed by the Thai members of the team. The Thai team members focussed on interviewing government officials and micro and small business owners and workers, while I concentrated largely on tourism representative bodies, and large, medium, and small businesses, including foreign owned businesses with well-developed English skills.

But language is more than an act of speaking, it is also a dynamic act of cultural representation (Beaty and Takahashi, 1982; May, 2001). Definition of terms and the integration of the those terms into two different cultural settings (Beaty and Takahashi, 1982) can cause disparities between meanings. That said, it is not surprising that misunderstandings based on word semantics arose between the researcher and participants and cross-cultural team members. An example of the latter arose over the concept of „local

community". I used it to represent the tourism destination community. For Thais, this refers to small village units, whose members often have limited education opportunities and pursue traditional livelihoods. Tourism destination community members are seen as entrepreneurs and therefore do not fit into this category. Consequently, interpretations of terms and their usage in the field required much discussion with my Thai research team members to alleviate confusion and ensure that data was correct. If meanings were not properly understood by participants, answers and data would most likely be incorrect. Language was also simplified to promote understanding and acceptance and alleviate confusion.

4.10.4 Positionality, power & reflexivity in a cross-cultural context

The social character of qualitative research means that its undertaking automatically engages the researcher with power-laden social relations (Dowling, 2005). The relationship between myself as the „researcher" and the participants is laden with issues of equity and power. Who controls the direction of the interview, who controls the results, and who benefits, highlighting issues of positionality, equity, reciprocity, and differing agendas (Seidman, 1991). The dialogue between interviewer and participant and the resultant information is shaped immediately by individual characteristics and the social context within which the conversation occurs (Bulmer, 1993; Dowling, 2005; May, 2001). These aspects of research implementation affected participation and engagement throughout the interviewing process.

A common problem in undertaking cross-cultural research in developing countries is that participants seldom recognise what the researcher wants from them (Bulmer, 1993: 208). This was evident among the small and micro businesses in Khao Lak who felt that they were not important enough or qualified to have the „right" answer. My Thai research team colleagues surmised that their reluctance to participate could be explained by a lack of status congruency between respondent and interviewer (Bulmer, 1993), coupled with culturally-determined power hierarchies that left these „local people" unused to being asked about their opinions. To overcome this issue, reassurances in the worth of their experiences were expressed not only in terms of the research needs but my personal interest in them as people. Furthermore, interviews were scheduled in accordance with participant wishes to give them more control over the interview process. The participants were also given the option to stop the interview at any time and indeed withdraw their participation completely throughout the interview to award them essential control over the interview, and what information we were able to use.

Sidway (1992) suggests that development researchers from the industrialised world will often enter local society further up the social hierarchy than their respective positions at home. Scott *et al.* (2006b) observed that, as researchers, their foreignness, age, and female gender influenced their treatment and research experiences in Vietnam. My personal characteristics of being a western female with a high level of education and knowledge of the formalised processes surrounding the recovery (i.e. who to approach for assistance, planning issues, financial assistance) also influenced my treatment. On the one hand, my personal characteristics as a western and educated young woman opened up spaces for further enquiry and gave me legitimacy in the eyes of some other Khao Lak participants. I had no trouble in securing the participation of some more senior tourism association members but my Thai colleagues did. Some „local" participants – a group that the Thais including my colleagues characterised as having limited education and few interactions with governance processes – seemed flattered by my attention. On the other hand, though, I was completely ignored in a meeting with a young Thai local NGO representative who treated me with what I and my colleagues interpreted to be contempt, and refused to look at or talk to me. Instead, all his attention focussed on my Thai colleagues.

There were also cases where not having the „right answer" was used as an excuse for not participating. It was evident that some Thai stakeholders did not want to participate but wanted to avoid looking bad or unhelpful by declining outright. Arising from the Buddhist „middle path" dogma (Irwin, 1996), conflict avoidance is admired and expected in Thailand. Asia's collectivist cultures place very high value on human relationships and the preservation of unity, harmony, and face (Irwin, 1996). Accordingly, „yes" may mean they understand you instead of that they agree with you (Irwin, 1996). In this harmony-seeking situation, people can appear to outsiders from other cultures as hesitant. Furthermore, people may be told what they want to hear rather than the truth (Irwin, 1996: 51-52). This was a regular occurrence in Patong where businesses were busier and more self-reliant, reflecting an absence of need and concern with outside activities that may not benefit them. The outcome for me as a western researcher was confusion in trying to ascertain if indeed a „yes" meant that I had secured an interview or not, which gave rise to frustration and time delays.

4.10.5 What I want, what you want, and what we got: reciprocity & conflicting agendas

As a human geography research student getting ready to enter the field, I was reminded that cross-cultural field-based research requires respectful listening, difficult and challenging engagements, and respectful attention to differences in „others" (Howitt and Stevens, 2005; Scott et al., 2006b). Stevens (in Howitt and Stevens, 2005: 36) advocates for a greater level of idealism from researchers, where less attention is given to largely self-serving research

focussed on enhancing academic careers or bringing greater financial gain, and more is awarded to research that facilitates engagement in advocacy and greater awareness of exploitative political, social, and economic relationships, processes, and contexts. Madge (1997) concurs stating that ethical research should have the potential to do good and empower participants. These ideas remained at the back of my mind throughout the fieldwork process but I, like all PhD students, also had distinct needs to fulfil before I returned home to Australia. The most obvious need was to collect the data necessary needed to fulfil my PhD aims and objectives. I also had more personal needs, namely to help those affected communities in some way and to make some contribution to those that were gracious and strong enough to speak to me about events that caused them emotional pain, pain I could only try attempt to understand. Wolcott eloquently sums the dilemma up by observing that "altruism and research make strange bedfellows" (1995: 136). We as social researchers are not objective robots (Smith, 1999) that who can easily cut ourselves off emotionally from our interactions with our surroundings, but the quandary of where to draw the line with regard to interaction with participants and their responses is a particularly difficult and harrowing challenge for students who are learning by doing.

What I wanted: My post-tsunami research was driven by more than the fulfilment of my PhD aims and objectives. Following on from my work in Khao Lak in 2005 (see Calgaro, 2005), I also wanted to help support the tsunami-affected destination community of Khao Lak (in particular) by raising awareness of their experiences, needs, and concerns. However, this intention was inadvertently disputed by a complete stranger. The man in question was not a Thai but a Westerner who overheard one of our research team debriefing sessions in a Khao Lak cafe. I was accused of being a „do-gooder" who could not in any way help the community, telling me I should be ashamed of myself in trying to profit from their misery. I, along with my SEI colleague, were shocked and tried later to brush the man"s opinions aside but the incident caused me to strongly doubt my own intentions and question not only the worth of my project but the ethics and legitimacy of self-serving Western enquiry, highlighted by Howitt and Stevens (2005).

The man"s assertions, although wrong in my case, were not without some foundation. For example, in 2005 when I began my research in Khao Lak (see Calgaro, 2005) I was told of multiple examples where smaller Christian NGOs were offering financial aid and the supply of equipment (such as small fishing vessels) in exchange for religious conversions[71] (local tour operator, *pers. comm.* 10 July 2005; two international volunteers based at Tsunami

Volunteers Centre, Khao Lak, *pers. comm.* 14 July 2005)[****]. Much frustration among the Khao Lak community also arose from unfulfilled promises of assistance and feedback from researchers who had come to Khao Lak over the two-year period between my first (2005), second, and third (2007) fieldwork visits [22,28,33,35].

What the participants wanted and what they wanted to avoid: Putting my agenda aside, the perceptions, goals, and agendas of the participant also require attention. Throughout the interviewing process, two reactions to our research dominated; the first being suspicion of our research goals, and the second being interest and gratitude for giving some the opportunity to share their experiences. Disinterest in participation was largely due to two factors: (i) suspicion surrounding research goals, data usage, and confidentiality; and (ii) interview fatigue. Suspicion regarding the study goals, the agendas of the researchers, and the usage of the collected data hindered our success in securing interviews with small business owners and staff. One Patong resident went so far as to accuse my Thai colleague of collecting information for the government to justify raising taxes. Bulmer (1993) attributes this reaction (when experienced in a development context) to unfamiliarity of researchers and their agendas, and the value of the desired data.

Suspicions were often paired with a fear of self-implication and recrimination, when broaching power relationships and governance anomalies. This was particularly acute in Phi Phi Don. Throughout the interview phase it became apparent to all three members of the research team that an underlying tension exists on the island that is related to power. Whilst only a few participants refused interview requests, there was a general unwillingness among Thai participants to talk about power structures that affect the island. This includes government actions as well as the power dynamics that surround the private sector on Phi Phi Don, namely the five rich and dominant landowner families who essentially rule the island (see Sections 6.6.2 and 6.7.2). Most Thai participants were uncomfortable talking about issues of power. Issues relating to how community members relate to each other and the ruling elite were generally dealt with by talking around the issues whilst looking very uncomfortable, or were avoided altogether by direct refusals to talk about them.

Testimonials from foreign residents and outspoken Thai residents revealed that this reluctance is connected to a fear of self-incrimination and unfavourable ramifications, in the event of their comments reaching those being talked about[215,237,240,247]. Unfavourable ramifications delivered through intertwined kin networks of influence include having their

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[****] I use selective full personal communication references throughout this thesis to acknowledge information sourced from my first interviews undertaken in my preliminary DVA of Khao Lak in 2005. Alternatively, the numbers 1 to 279 are used to acknowledge sources for information obtained from the PhD fieldwork.

property vandalised, or being driven off the island, leading to the loss of their business[237,247,248,256]. Another explanation lies with the collective nature of the Thai culture, which places a high value on human relationships and the preservation of unity, harmony, and face (Irwin, 1996). As noted in Section 4.4, Thailand is a collectivist society where humility, maintaining harmony and „saving face", self-depreciation, and deference to very strong social hierarchies of power shape all aspects of social interaction (Hanks, 1975; King, 2008; Paton et al., 2008). These characteristics leads to the use of avoidance, third-party intermediaries, or other face saving techniques that protect the group from unfavourable occurrences (Lustig and Koester, 1993). Strong island patron-client relationships based around family networks further heightens reluctance to speak out against the actions of the ruling landowner families. Accordingly, airing personal grievances, particularly those pertaining to historically-embedded injustices and inequalities reinforced by the ruling elite, are avidly avoided. The reality of island living where community members co-exist in a geographically confined space heightens the reluctance to speak openly about sensitive power issues. It is hard to hide one‟s identity and actions on an island where everyone knows each other‟s business[215,237,240].

Interview fatigue was another ground for disinterest in participation. There were two reasons for interview fatigue. First, people found themselves „over-researched" and subject to multiple enquiries (by government officials, NGOs, the media and research groups) which resulted in little feedback or change, a pitfall that Scheyvens and Nowak (2003) and Khasalamwa (2009) highlight. Participants have a right to know „what is in it for me and what relevance does this have for my situation?". This was very much the case in Patong[106] and Phi Phi Don[194,220] but was less of a factor in Khao Lak[33,35,36] (field observations). Few stakeholders in Khao Lak refused to be interviewed but the president of the Phang Nga Tourism Association specifically requested feedback to the community once our study was finished, to ensure that the community benefits and learns from our research. Second, people did not want to relive the disaster through discussions. Instead they wanted to focus on normalcy and the future. An Australian bar owner in Patong advised that his staff did not want to see pictures and avoided exposure to anniversary reports because they do not want to remember[141]. Others confirmed this[158] with one participant adding "the tsunami is old news"[109].

Participants also have their own agendas and ideas about what can be taken from their interaction with the researcher (Howitt and Stevens, 2005). In some instances, participants were using me as a way to gain information, and to voice and petition their needs, whilst I was using them as vessels of information to inform my chosen topic. For Dowling (2005), knowledge is both directly and indirectly powerful. Knowledge bestows power to those who

have access to it and it can be used in numerous ways. Knowledge and the power it grants to those that have access to it can support or refute arguments and effect change (Dunn, 2005). But knowledge can also indirectly affect perceptions of people and issues (Dowling, 2005). Those same participants[29,32] that held me in high esteem because I was a well-informed westerner used our interaction to gain an overview of the recovery process, and information on the best ways to get access to resources they needed. Other participants[28,201,242] saw me as both a good source of information on their communities, as well as a vessel for publicising their post-tsunami actions and achievements, and championing their goals for future development. My awareness of me being used as a means from which to gain leverage in furthering the ambitions of some participants over their rivals placed me is a very difficult position. I was forced to choose my words very carefully when answering the probing questions of participants, so as not to compromise confidentiality which is hard to keep in small communities. The FGDs also promoted curiosity from tourism community members who were interested in learning from each other and using their shared experiences and goals to promoting change and social transformation following the disaster[A,B,C,D,G,Q,I].

In keeping with Seidman's (1991) interview experiences, I offered a specific type of listening that honoured the participants' stories and experiences by giving them a voice, access to new audiences, and creating a greater awareness of their real needs, to replace the stereotypes and misconceptions about their plight. There were expressions of appreciation from industry associations for caring enough to examine the problems of destination vulnerability, and for heightening community awareness of vulnerability assessments and their role in furthering destination community resilience against future shocks[132]. But I also offered participants an opportunity to just talk about their experiences and have someone there willing to just listen. There were other participants[32,35,51,97] that embraced the opportunity to share their stories, express and reconcile their grief and trauma, which helped them heal. The need for participants to express their feelings is powerfully articulated by an English trainer I spoke to in Khao Lak:

> Yeah, I'm fine. I did have some post traumatic stress, or so I've been told but it's good to tell you the story…No one really cares to hear this story. It's very upsetting. It's very upsetting for friends because they weren't here so they can't relate, my children, some of my children viewed it on television. They saw the horror of the tsunami right across the Indian Ocean, the other countries that were affected. They were glued to the TV set. They were filled to the brim with it so if I tried to open up about a personal friend, they had already been saturated with it that they couldn't take in my personal story[97].

The interview process and FGDs also gave participants a platform to voice their disappointments and frustrations, arising from a feeling of isolation, being overlooked and

misrepresented   by   government   bodies,   NGOs,   and   financial institutions[25,28,29,32,33,59,81,115,158,201,209,247,B,F,I]. The implications of this mounting disillusionment with the recovery process is explored in more detail in Section 7.2.3 in Chapter 7.

What we got: There was another more amusing twist in the research process that surfaced when I was requesting interviews with some smaller business owners in Patong. The desire of small businesses to sell something clashed with my desire to secure an interview, beginning an uncomfortable dance of wills and persuasion. This happened constantly in Patong where high competition among vendors and service providers (particularly amongst the multitude of souvenir and street vendors, masseurs, and tailors) creates a highly aggressive selling environment. Confident and in some instances brash, business operators and sales staff would constantly accost me as I walked past trying to sell me something. The dynamics of the interactions changed remarkably when I asked them for an interview. They became self-conscious and a little uncertain when the role of pursuer was reversed. In some instances I found myself buying something with the prospective participant to gain favour or as an inadvertent thank you for their participation. For example, I commissioned the making of a shirt in Patong by a tailor because they were so helpful and obliging. I felt a strong need to give something back „in the moment", particularly because business was not good. But the process left me feeling uneasy and wondering if I has unintentionally bought an interview. I also felt great pressure to ensure that we as researchers returned to the communities after the interview phase and honoured our intentions of providing the communities with feedback on the finding. In line with my university"s ethics regulations, these intentions were clearly outlined in an Information and Consent Form (presented in Appendix A) (Dowling, 2005; Scheyvens et al., 2003). The undertaking of the FGDs provided us with a collection of small community forums to report back on initial findings and gave participants the opportunity to directly voice their major concerns and directly influence results and outputs (see Appendix C for more detail). Yet, throughout the research process feelings of guilt about not being able to honour our commitments remained.

4.10.6 *You seem fine but I"m not: dealing with post-traumatic stress and culture shock*

Dowling (2005) and Scheyvens *et al.* (2003) emphasise the need to ensure the wellbeing of yourself as well as your participants. The undertaking of research in three disaster-affected communities pushed this concern to the top of the list (Hilhorst and Jansen, 2005). Aware that my questions could trigger episodes of post-traumatic stress, details of counselling services that participants could use were made ready in accordance with my university"s research ethics requirements. Recollections of the tsunami event and the subsequent recovery process did evoke emotional reactions from some participants in Khao Lak and Phi

Phi Don, where populations were heavily affected and the losses were great. However, there was only one occasion in Khao Lak where the services of a counselling clinic were sought. Yet despite good planning structures and intensions, the field can produce unexpected surprises. The recommended local clinic had closed and the nearest one was in Phuket, located approximately 90 kilometres to the south. Provisions were made in partnership with the participant‟s friend, who accompanied her to the interview to provide support.

One aspect I overlooked in the fieldwork planning process was the negative impact of post-traumatic stress on *me* as the researcher. Stallings (2002) stresses that the context within which post-disaster research takes place is highly variable, depending on the timing of engagement, be it during, just after the disaster, or in the longer-term recovery phase. These contextualised differences became painfully clear within my first week of fieldwork in Khao Lak. Having undertaken exploratory vulnerability research in Khao Lak in 2005 (Calgaro, 2005), I was ill-prepared for the change in outlook and attitudes of the community members. Feelings of determination and optimism expressed six months after the tsunami had been largely replaced by disillusionment, bitterness, and apathy towards government and NGO support and in some instances, complete helplessness in the space of 18 months. The reason for this negativity was due to a common belief that they had been overlooked by NGOs and their needs ignored by government bodies, as noted in the previous section. The interview interactions left me feeling despair from the unintentional internalisation of the participants‟ raw grief and horrific memories. I also felt helpless and guilty for benefiting indirectly from their stories, whilst being unable to give anything concrete back in that moment. This feeling was worsened by the isolated instance of abuse (see Section 4.10.5).

Emotional support and the importance of debriefing with more senior colleagues or research supervisors in the University context are identified as essential coping mechanisms for those working in occupations that regularly expose them to stressful, hazardous, and dangerous environments (Hilhorst and Jansen, 2005; Lowery and Stokes, 2005; Stephens et al., 1997). Lowery and Stokes (2005) stress that this need is even greater among students with little prior exposure to stressful and unpredictable environments. The verbal process of debriefing or talking through stressful experiences, particularly with sympathetic and emotionally-open peers with shared experiences, facilitates emotional processing and healing (Lowery and Stokes, 2005; Stephens et al., 1997). I was fortunate to have had the opportunity to talk to my supervisors both in person and over the phone throughout my first week of fieldwork in Khao Lak, to help me to realise why I was experiencing sudden, intense, and debilitating feelings of despair, grief, guilt, outbursts of unexplained anger, and physical panic attacks. These conversations enabled me to work through my feelings and experiences and continue

on with my fieldwork.

The early field experiences of post-traumatic stress was compounded by delayed culture shock, and the daily stresses of cross-cultural interactions arising from the loss of personal support systems, difficulties caused by language barriers and value differences between cultures, fear of embarrassment, and mistakes that could adversely affect research rigour (Hilhorst and Jansen, 2005; Irwin, 1996; Scheyvens and Nowak, 2003). That said, this constant interaction and internal questioning produced fundamental insights into the stark culturally-laden differences pertaining to the worth and applicability of research outcomes, legitimacy, meaning of commonly used terms (what does „local people" mean anyway?), and perceptions of „the needy" versus „the deserved". The intensity of culture shock was lessened on first contact due to the westernised experience that each destination offered. Each destination setting has been moulded to mirror the needs, images, and cultural sensitivities of the dominant western tourist. However, the false security derived from the westernised destination setting or tourist bubble was short lived, leaving me ill-prepared for the stark differences that underlie the constructed veneer. Compounding my culturally-induced discomfort in the field was the daily stress of pounding the pavement asking strangers for interviews, and being mindful of wording and behaviour so as not to offend. All the while, I wrestled with the feeling that each answer could make or break my PhD.

4.11 Conclusion

The three baseline questions that underpin all vulnerability assessments are: *who* is vulnerable, *what* are they vulnerable to, and *why*? In the first half of this chapter I have answered the first two questions that together set the stage for answering the final and most important question of *why*? The subjects of the assessment (*who*), the Thai destinations of Khao Lak, Patong, and Phi Phi Don, are introduced. Narratives of the destinations" developmental histories and their characteristics as destinations and host communities are followed by a description of the destabilising event they were vulnerable to (*to what*). The 2004 Great Sumatra-Andaman Earthquake and the subsequent tsunami are described, as is the tsunami"s impact on the destinations and their recovery rates. With a magnitude of M_w 9.3, the Great Sumatra-Andaman Earthquake that generated the 2004 tsunami stands as the second largest earthquake in recorded history, and displaced an estimated $30km^3$ of water that decimated the communities of Khao Lak and Phi Phi Don, and heavily damaged Patong"s foreshore and, with it, the image of the most visited destination in Thailand.

From this introduction it is clear that Khao Lak, Patong, and Phi Phi Don are more than tourist destinations that were badly affected by the 2004 tsunami disaster - they are living

communities with very different developmental histories, characteristics, visions, and coping capacities, resulting in differential rates of rejuvenation. Linking them, however, is the shared disaster experience and their general appeal that revolves loosely around „sun, sea, and sand". These commonalities and differences formed the basis for their selection as case study sites for the comparative DVA presented in this thesis. The other important factor in their selection was the amount of damage each sustained from the tsunami. Patong is the most established destination of the three and has a wide appeal and market base as a shopping and nightlife hub. It was also the least affected in terms of lives lost and structural damage sustained. Khao Lak, in stark contrast, is the youngest and most sedate and relaxing destination, and suffered the greatest losses. Ninety percent of the destination was destroyed and thousands of lives with it. Phi Phi Don also suffered heavy losses with 70 percent of the structures damaged, but has a longer developmental history than Khao Lak and a broader, more established, branding and appeal. Yet whilst the destinations may be different in character, their development is influenced by similar governance structures. The central RTG influences tourism marketing, and policy and planning in the three destinations, through the TAT and the Ministry of Tourism of Sport respectively, but leaves the provincial and local governments that oversee the three communities to adjust planning strategies and implement them in ways that most benefit the local context.

The second part of the chapter presented how the rich data required for the DVA was collected. The methods included in the research design, and the advantages of each method in assessing destination vulnerability across three destinations, were outlined. But in this chapter I also show that methods only form one part of the social research process. The process of doing research in the field, and the challenges faced in a post-disaster tourism context, also enabled important power dynamics between community stakeholders and contextualised characteristics to surface. These not only affected my experiences as a human geographer, but also shaped the quality and type of data I collected, and inevitably the findings.

The next three chapters mark a distinct shift in focus, away from setting the foundations of my research, to telling a story of Khao Lak, Patong, and Phi Phi Don. Chapters 5 to 7 detail the empirical findings of my research that compare and explain *why* vulnerability levels varied within and across the three tourism destinations of Khao Lak, Patong, and Phi Phi Don. They examine the causal factors and processes that have created differential vulnerability and resilience levels and recovery rates across Khao Lak, Patong, and Phi Phi Don, and present these through the theoretical lens of the Destination Sustainability Framework.

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5   Exposure

5.1 Introduction

Tourism destinations are the physical place-based manifestations of the carefully packaged images and experiences that are sold to, and consumed by, the travelling public. As such, the physical characteristics of each destination reflects the collective desires of the destination"s main markets and the interpreted expressions of these desires undertaken by marketing bodies, tour operators, and business owners operating both within and outside the destination. Yet these same physical characteristics also affect a destination"s exposure - the first dimension of destination vulnerability - to shocks and stressors. Having identified the main market and host community characteristics of Patong, Phi Phi Don, and Khao Lak (who), described the 2004 Great Sumatra-Andaman earthquake and tsunami (to what), and its impact on each destination in Chapter 4, this chapter explores why each destination experienced differential damage and exposure levels. Influencing the differential exposure levels and consequent tsunami impact patterns sustained in each destination are the unique place-specific biophysical characteristics of Patong, Phi Phi Don, and Khao Lak, as well as the nature of the built environments, including settlement location and development patterns, as shown in white in Figure 5.1.

Before moving on to explore these factors I must stress that, like the nature of vulnerability itself (Clark et al., 1998; Nankervis, 2000; Turner et al., 2003), the presentation of the causal factors and processes that determine the three dimensions of vulnerability - *exposure, sensitivity, and system adaptiveness* - is neither simple nor linear. The explanations of the interconnected factors that influence each dimension feed into and off each other, and therefore do not always fit neatly into predetermined categories. Accordingly, I use the theoretical base of my DSF to help structure and guide the examination of the complex and intertwined social-ecological processes that influenced the vulnerability of Khao Lak, Patong, and Phi Phi Don to the tsunami, and that heighten their vulnerability to future events. Each of the following three empirical chapters, therefore, features the DSF (Figure 5.1), which highlights the factors that are the focus of the proceeding chapter and theoretically anchors the discussion throughout the chapters. Woven throughout this three-dimensional examination of destination vulnerability are explorations of how those contextualised characteristics found in *place* influence vulnerability over *time*.
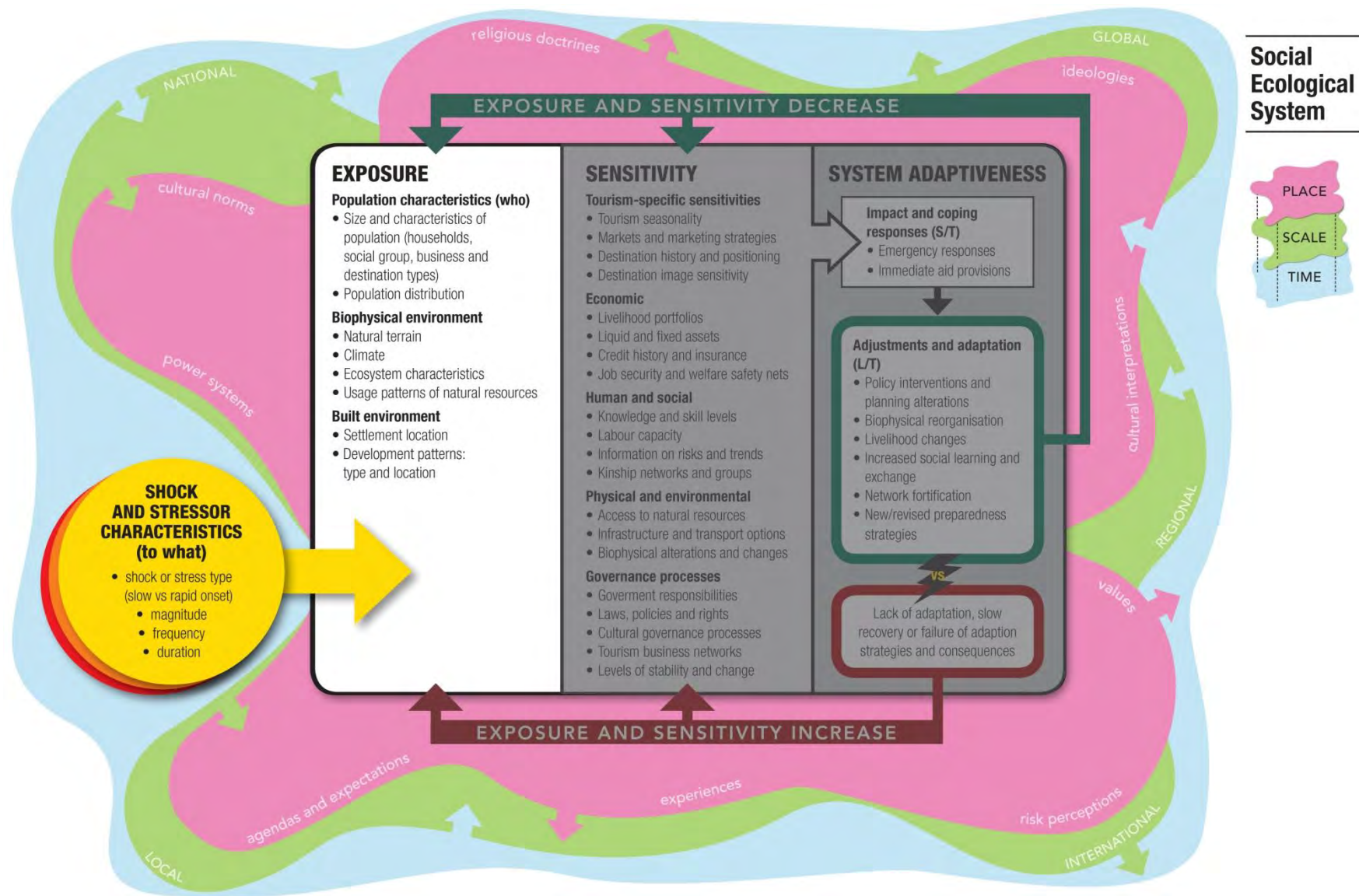
Figure 5.1: Factors influencing exposure levels in tourism destinations

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## 5.2 Differential biophysical characteristics

The biophysical characteristics of places where people live and work is identified in the DSF as one of the main determinants of a population‟s exposure to shocks or stressors. Findings from the comparative DVA of Khao Lak, Patong and Phi Phi Don confirm this. The nature of the off-shore bathymetry and coastal topography greatly influenced the form the tsunami waves took as they reached the shores of Patong Beach, Khao Lak, and Phi Phi Don. The run-up heights and inundation patterns in Khao Lak were much higher than those at Patong Beach and Phi Phi Don, as shown in Table 5.1. Inundation patterns also differed greatly in each destination. As the waves entered the shallower coastal waters and start to „feel‟ the ocean floor, the wave lengths and velocities reduced whilst the amplitudes increased, causing rapid and deep inundation of the low-lying destinations (RMS, 2006). Maximum inundation reached approximately 3,500 metres in Khao Lak, and 800 metres in Patong, whilst the heavily developed sand isthmus of Phi Phi Don that lies between its twin bays (approximately 1,200 metres long and 100 to 1,000 metres wide) was completely submerged (Bell et al., 2005a; Ioualalen et al., 2007). These differences were caused by variations in off-shore bathymetry, the nature and shape of the on-shore terrain, and the differential on-shore development patterns found in the three destinations (Dalrymple and Kriebel, 2005; Kawata et al., 2005).

Table 5.1: Tsunami run-up heights above mean sea level

| Location	Run-up height ranges (metres)
Khao Lak	4.48 – 11.62
Patong	4.90 – 5.48
Phi Phi Don	4.58 – 6.89

Sources: data from Ioualalen et al. (2007), NGDC (2009) and Rossetto et al. (2006).

Figure 5.2 shows the differential pattern and reach of inundation along the beaches that collectively constitute Khao Lak. Maximum inundation reached approximately 3,500 metres at Laem Pakarang, and 1,500 to 2,000 metres at Bang Niang, before tapering down to between 500 and 1,000 metres at Nang Thong. Figure 5.3 details the run-up heights recorded along Khao Lak‟s coastline. Some estimates indicate run-up heights to be as high as 14 metres (see Bell et al., 2005a; Ioualalen et al., 2007; Rossetto et al., 2006). Water marks left on buildings and roofs (Figure 5.4) indicate that flow depths reached 7 to 8 metres in Khao Lak (Warnitchai, 2005).
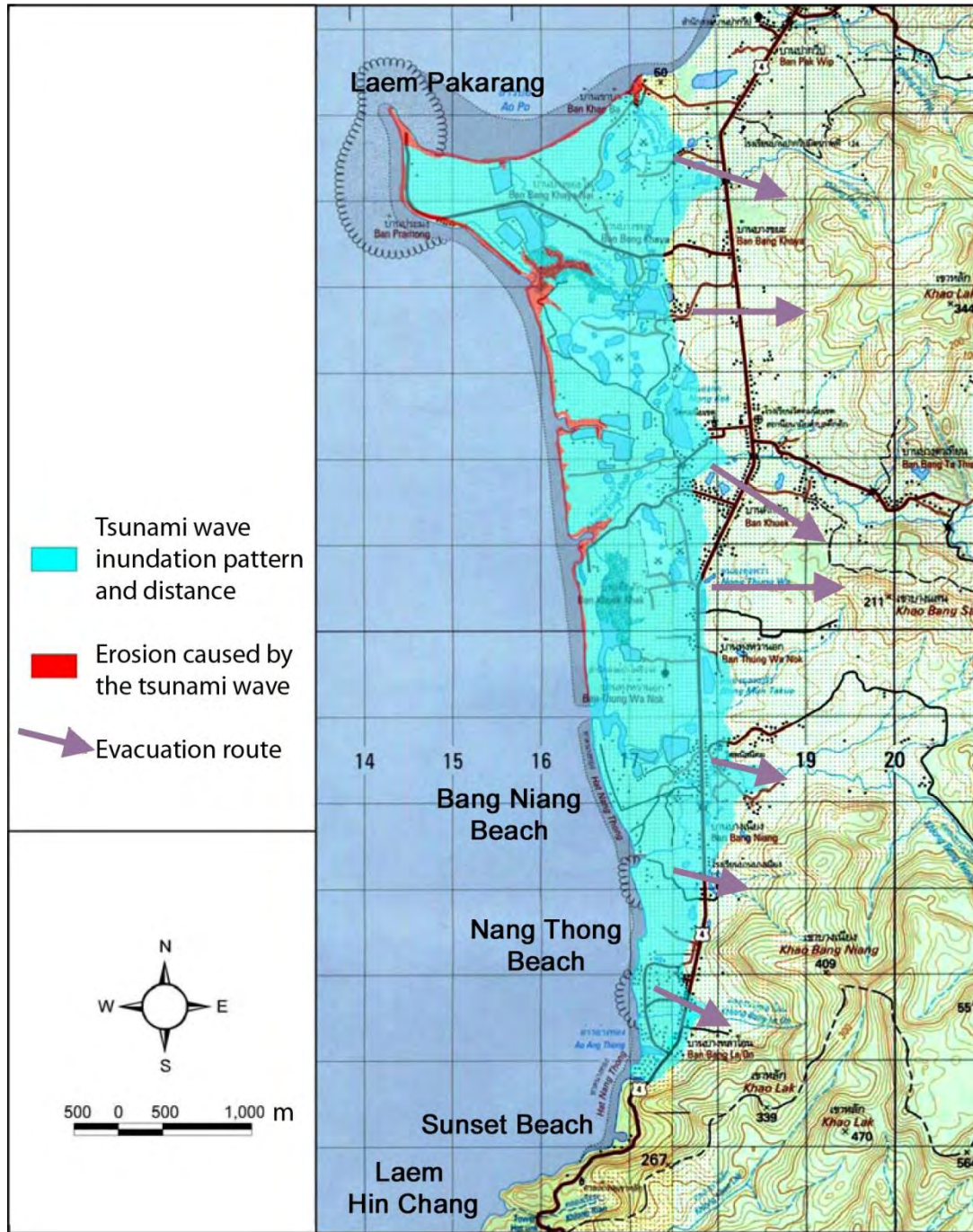
Source: Department of Geology, Faculty of Science, Chulalongkorn University, Bangkok, 2005.

Figure 5.2: Inundation levels along the shoreline of Khao Lak
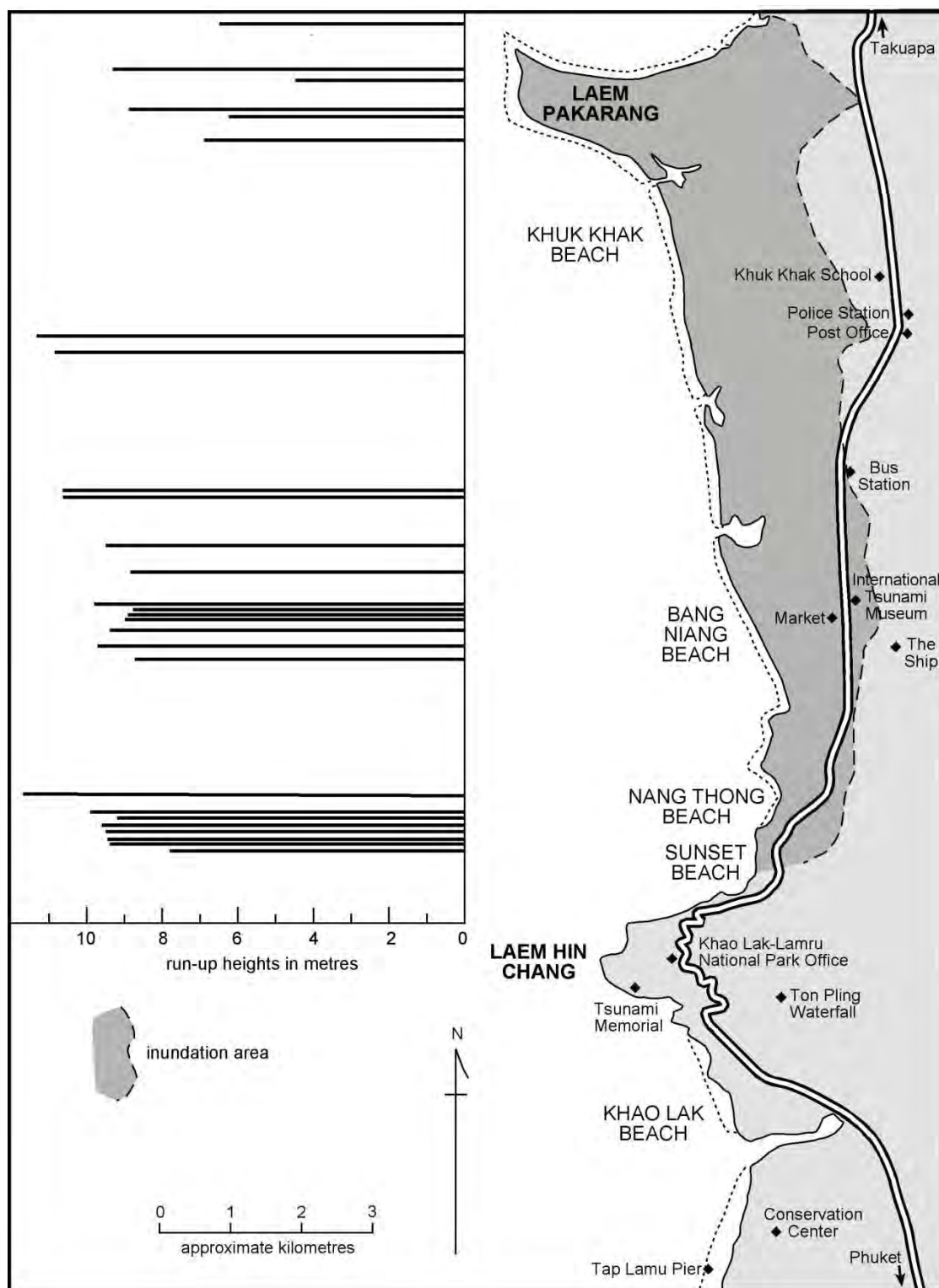
Source: run-up data taken from Ioualalen et al. (2007) and NGDC (2009).

Figure 5.3: Run-up heights along Khao Lak's coastline

Source: Warnitchai (2005: 4).

Figure 5.4: Maximum flow depths in Khao Lak reached 7 to 8 metres

The extreme run-up heights and deep inundation patterns at Khao Lak were caused by six factors. First, The bathymetry and sea depths off the coast of Khao Lak are very shallow, as shown in Figure 5.5. Khao Lak‟s near-shore slope does not reach 10 metres in depth until approximately three kilometres from the shoreline (see Pomonis et al., 2006). The shallowness of the foreshore shelf created a shoaling effect, which greatly increased the wave velocity (estimated between six to eight metres per second) and height (Chatenoux and Peduzzi, 2005; Dalrymple and Kriebel, 2005; Siripong et al., 2005; Shuto, 2005). The waves broke far offshore and came ashore as a vertical wall of water.

Second, the tsunami‟s onset coincided with high tide, causing the tsunami to ride on top of the elevated tidal water level (Bell et al., 2005b; Kawata et al., 2005; Dalrymple and Kriebel, 2005). Third, the concentration of the tsunami waves toward Khao Lak was heightened by convergence due to refraction off the northern and southern headlands of Laem Pakarang and Laem Hin Chang (shown clearly in Figure 5.5),) that border the heart of the destination (Gubbels, 2005; Siripong, 2006; Skelton et al., 2008). The combined effects of convergence and foreshore shallowness on tsunami wave heights are perfectly illustrated at Laem Pakarang, where the
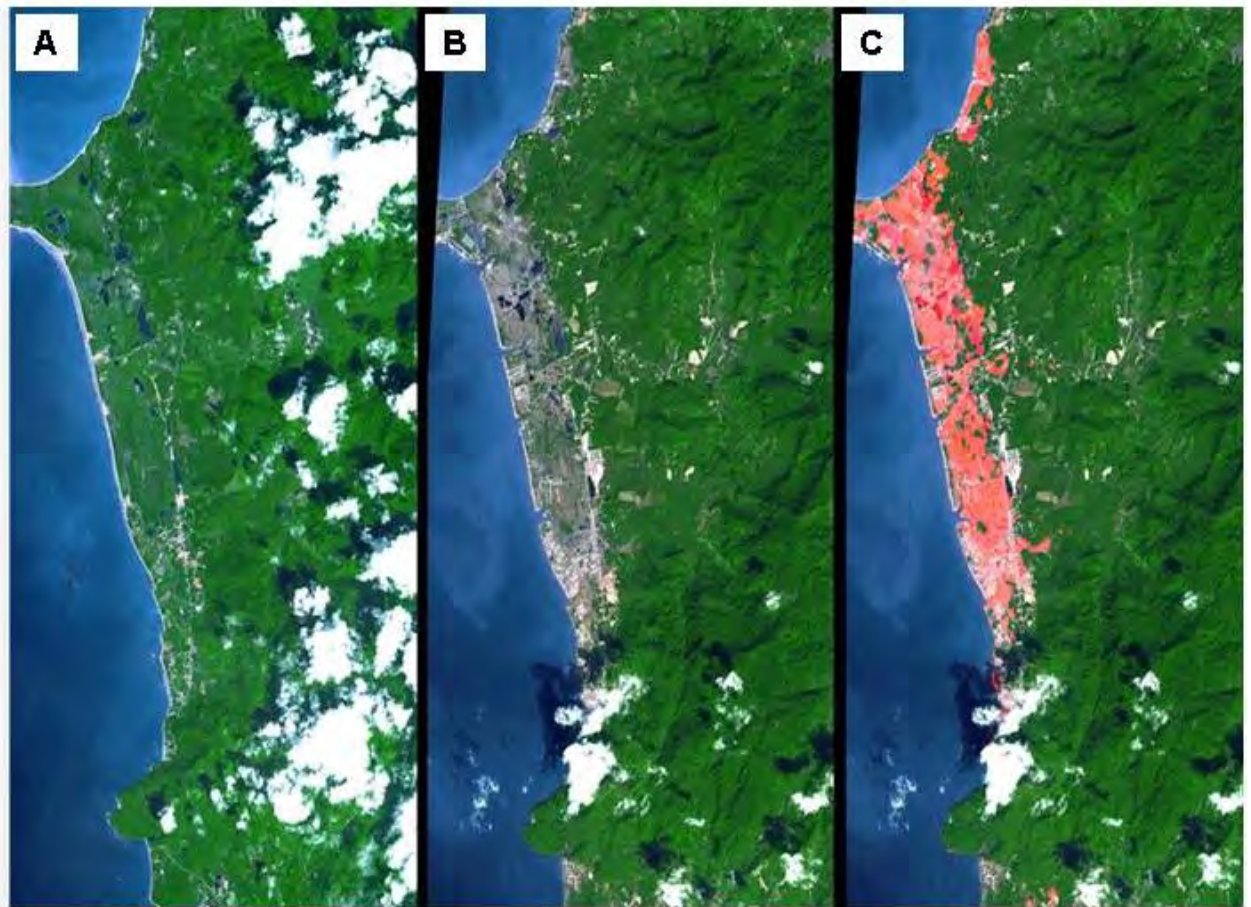
foreshore is so shallow that the sea bottom is routinely exposed at low tide. Here wave run-ups reached 10.62 metres while eyewitness accounts suggest the convergence of tsunami waves from three directions (Siripong, 2006). The force of the waves severed the terminal of the cape‟s spit and eroded the beachfront (beach erosion is marked in red in Figure 5.2).

Fourth, the topography of much of Khao Lak is very flat (areas around Laem Pakarang and Bang Niang have maximum topographic elevations of 10 metres), presenting little resistance to the tsunami waves. Comparisons between Figure 5.2 and Figure 5.3 indicate that run-ups and inundation levels were highest along the extremely flat terrain that extends from Laem Pakarang in the north down to Bang Niang Beach. These two areas sustained the heaviest damage in terms of property damage and lives lost. The southern end of Khao Lak, comprising of Nang Thong and Sunset Beach, was better protected from the waves by the higher terrain. Eyewitness accounts and my field observations (recorded in a field diary) in mid-2005 confirm that resorts at Sunset Beach were only marginally affected by the waves because the development is built on the rising hills of the southern escarpment[78] (Calgaro, 2005). Nang Thong suffered immense damage along the beachfront where many of the larger and well-established resorts were located, but the waves were prevented from reaching the village of Nang Thong located along the main highway (marked as a red line running from north to south along the coast in Figure 5.2) by upward-sloping terrain.

Fifth, the waves were largely uninhibited by offshore islands, reefs, sea grass, and onshore vegetation, all of which that have the propensity to reduce wave energy. A thin belt of native coconut and Casuarina trees did little to protect the coastal zone from the immense force of the tsunami (Shuto, 2005; Dalrymple et al., 2006; Siripong, 2006; Cochard et al., 2008). The comparison of satellite images of the topography of Khao Lak, featured in Figure 5.6, shows the impact the tsunami had on the coastal plain and the vegetation. Image A portrays the topography of Khao Lak‟s coastline prior to the tsunami, which is covered by green vegetation. The extent and pattern of tsunami wave inundation is evident from the grey shading that is seen on Image B (taken on 31 December 2004), where the vegetation was stripped away by the tsunami. Image C highlights the low-lying nature of the topography. The area with a maximum topographic elevation of 10 metres is shown in red.

Source: adapted from Rossetto et al.(2006).

Figure 5.5: Coastal characteristics of Khao Lak in metres and observed impact intensity

Sixth, on-shore building densities were low, and therefore offered limited resistance (see Section 5.3). The force and reach of the waves resulted in heavy structural damage (90 percent of development affected) and coastal erosion, particularly at the northern headland of Laem Pakarang.

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Source: NASA (2005).

Figure 5.6: Satellite image comparison of Khao Lak's pre- and post-tsunami topography and inundation levels

Run-up heights were lower at Patong than those experienced in Khao Lak, and the water did not travel as far inland. Figure 5.7 shows run-up heights recorded at Patong. Figure 5.8 and Figure 5.9 show the extent of inundation experienced at Patong. The water extended from the Seaview Patong Resort located down the southern end of the beach, up to Laem Daeng (Cape Daeng) to the north of Patong Beach[106]. The water penetrated approximately 800 metres inland by way of the connecting inner roads that ran perpendicular to the beach[106,112]. Inundation was greatest along the Pak Bang Canal, situated at the far south of Patong Beach (shown in red in Figure 5.9), reaching approximately 1,200 metres inland as the water funnelled down the canal.
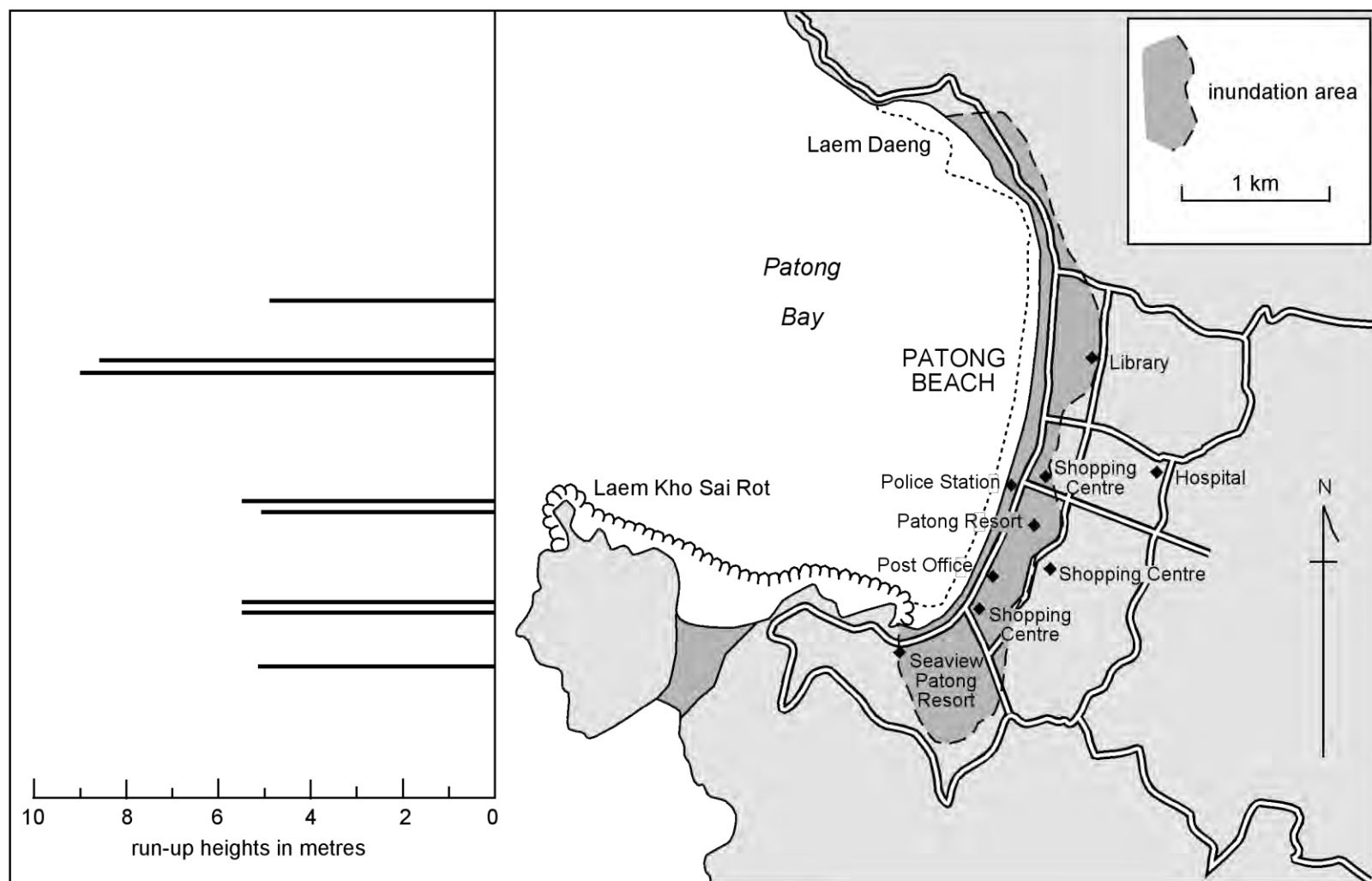
Source: run-up data taken from NGDC (2009) and Ioualalen *et al* (2007).

Figure 5.7: Run-up heights recorded at Patong Beach, Phuket Province
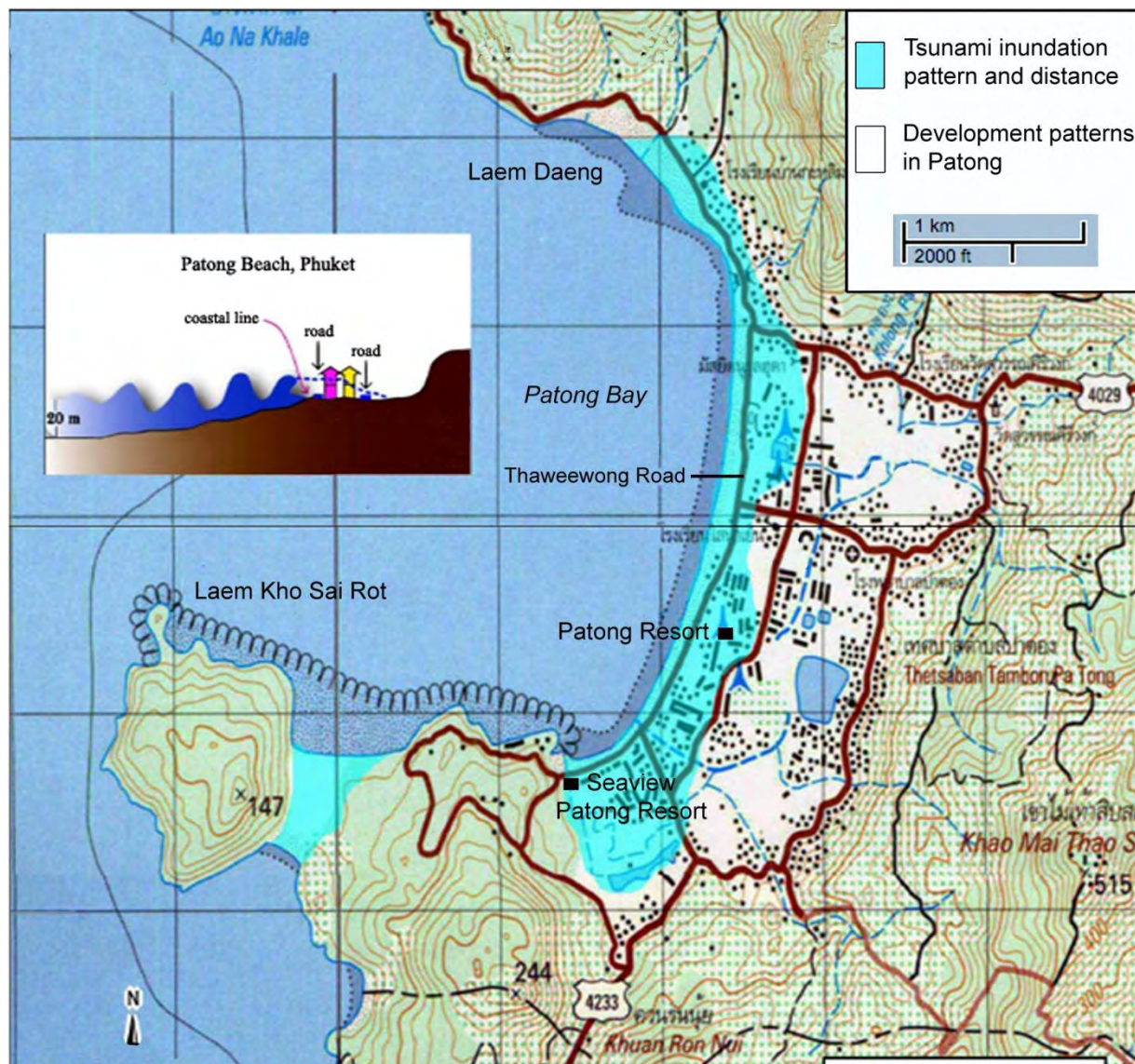
Source: Department of Geology, Faculty of Science, Chulalongkorn University, Bangkok, Thailand, 2005.

**Figure 5.8: Inundation levels recorded along Patong Beach**

Figure 5.9: Post-tsunami aerial satellite image of Patong showing inundation patterns

These exposure patterns were due to steeper off-shore bathymetry and on-shore topography, coupled with different onshore development patterns (Rossetto et al., 2007). First, the near-shore bathymetry of Patong Bay is deeper and steeper than that found off the coastlines of Khao Lak. Limited inundation and more rapid attenuation of flow depth with distance from shore are common where a steeper coastal profile is present (Bell et al., 2005a; Siripong et al., 2005; Strand and Masek, 2005; Rossetto et al., 2007). The steeper bathymetry of Patong Bay is depicted in Figure 5.10. The deeper water allowed the wave to travel much closer to the shore before breaking, whilst the steeper incline of the seabed caused the formation of a plunging breaker just off the beach, resulting in moderate run-up heights (Siripong, 2006).
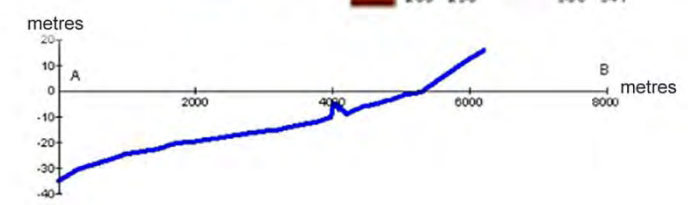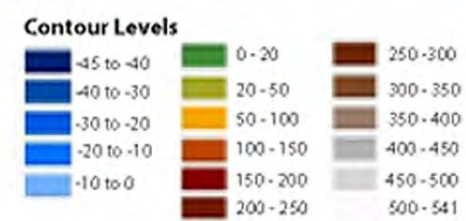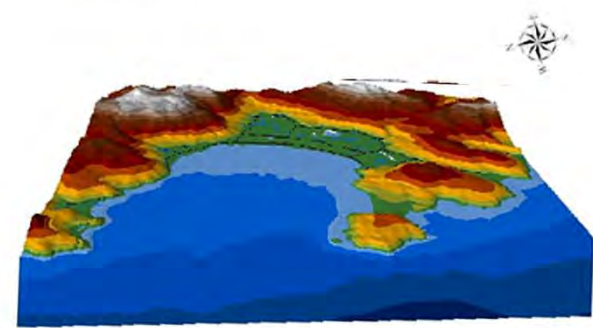
Second, the presence of a prominent underwater sand bar in the bay also helped to lessen wave energy and velocity (estimated at three to four metres per second) as it approached the shore (Matsutomi et al., 2005). Third, the topography of Patong"s main tourist area is steeper than Khao Lak and Phi Phi Don. Figures 5.10 and 5.11 shows that the topography of Patong rises approximately 20 metres above sea-level over a distance of 1,000 metres, which is double that of Khao Lak.

Finally, the high density of solid development that tightly lines much of the length of Patong Beach acted as a barrier to the waves, thereby limiting inundation penetration (Warnitchai, 2005). The waves pushed through the large windows of the hotels and support businesses that line the beachfront, but greater penetration was constrained and failed to reach very far past the first row of development[106]. However, having nowhere else to go, the water was then funnelled along the many small streets (sois) that run perpendicular to the beach, causing great damage to the small businesses that line the sois (Bell et al., 2005a). The curtailed wave inundation patterns observed in Patong is evident in Figure 5.11, which compares estimated run-up heights and inundation distances experienced in Patong and Khao Lak.
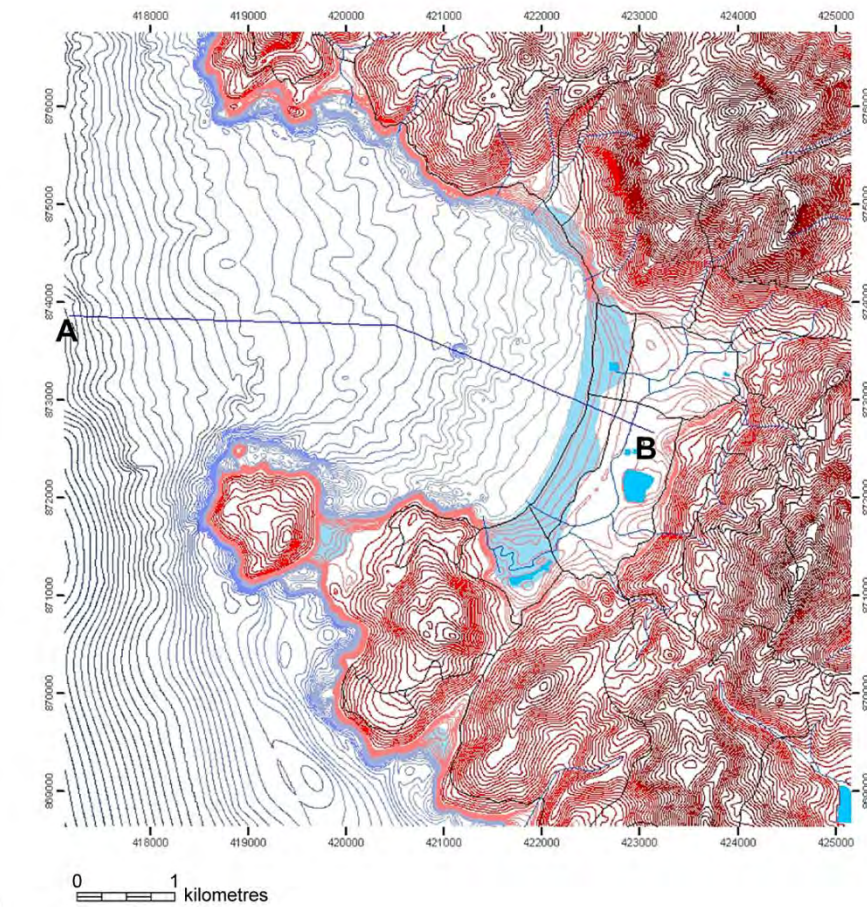
Coastal Topography Analysis in Tsunami Affected Areas: Patong Beach, Kratu District, Phuket Province

Information from 18 April 2005

Contour Levels

-45 to -40	0 - 20	250 - 300
-40 to -30	20 - 50	300 - 350
-30 to -20	50 - 100	350 - 400
-20 to -10	100 - 150	400 - 450
-10 to 0	150 - 200	450 - 500
	200 - 250	500 - 541

Contour Lines (meters)

-45 to -40	2 to 20	410 to 500
-39 to -30	30 to 100	510 to 540
-29 to -20	110 to 200	
-19 to -10	210 to 300	
-9 to 0	310 to 400	

Road
River/Canal
Water Bodies
Inundated Areas

Department of Geology, Faculty of Sciences, Chulalongkorn University.

**Figure 5.10: Coastal morphology of Patong Beach, Phuket Province**
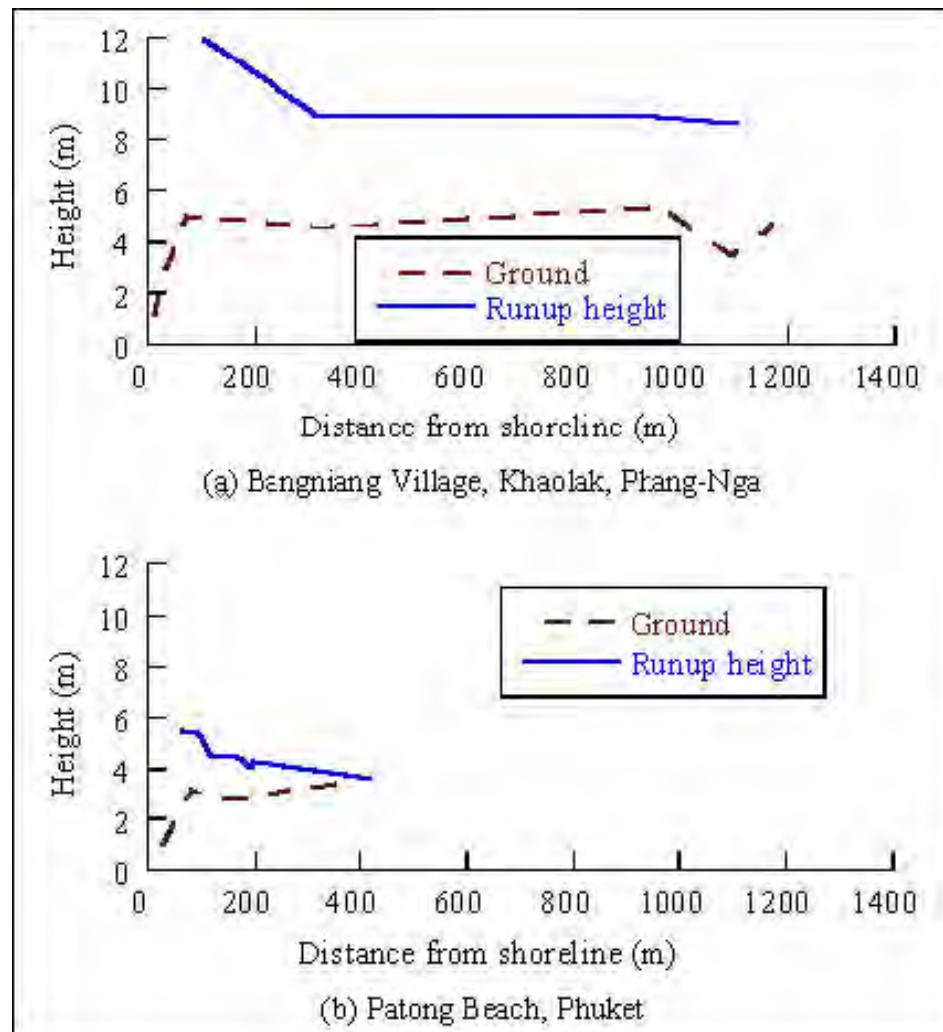
Figure 5.11: Relationship between run-up heights, inundation patterns and onshore characteristics

Phi Phi Don was devastated by the tsunami event, having suffered horrific losses that were only marginally less than Khao Lak. The complete submersion of the narrow sand isthmus that divides the twin bays of Phi Phi Don is evident when comparing aerial images taken before and after the tsunami event, as shown in Figure 5.12. The grey washed-out area in the bottom image depicts the stripping of most of the vegetation and the destruction of the built environment. The reasons can be attributed to the direction of the approaching tsunami, the shape of the island, and the low-lying nature of the heavily developed narrow isthmus.

Loh Dalum Bay

Before tsunami

Tonsai Bay

Loh Dalum Bay

After tsunami

Tonsai Bay
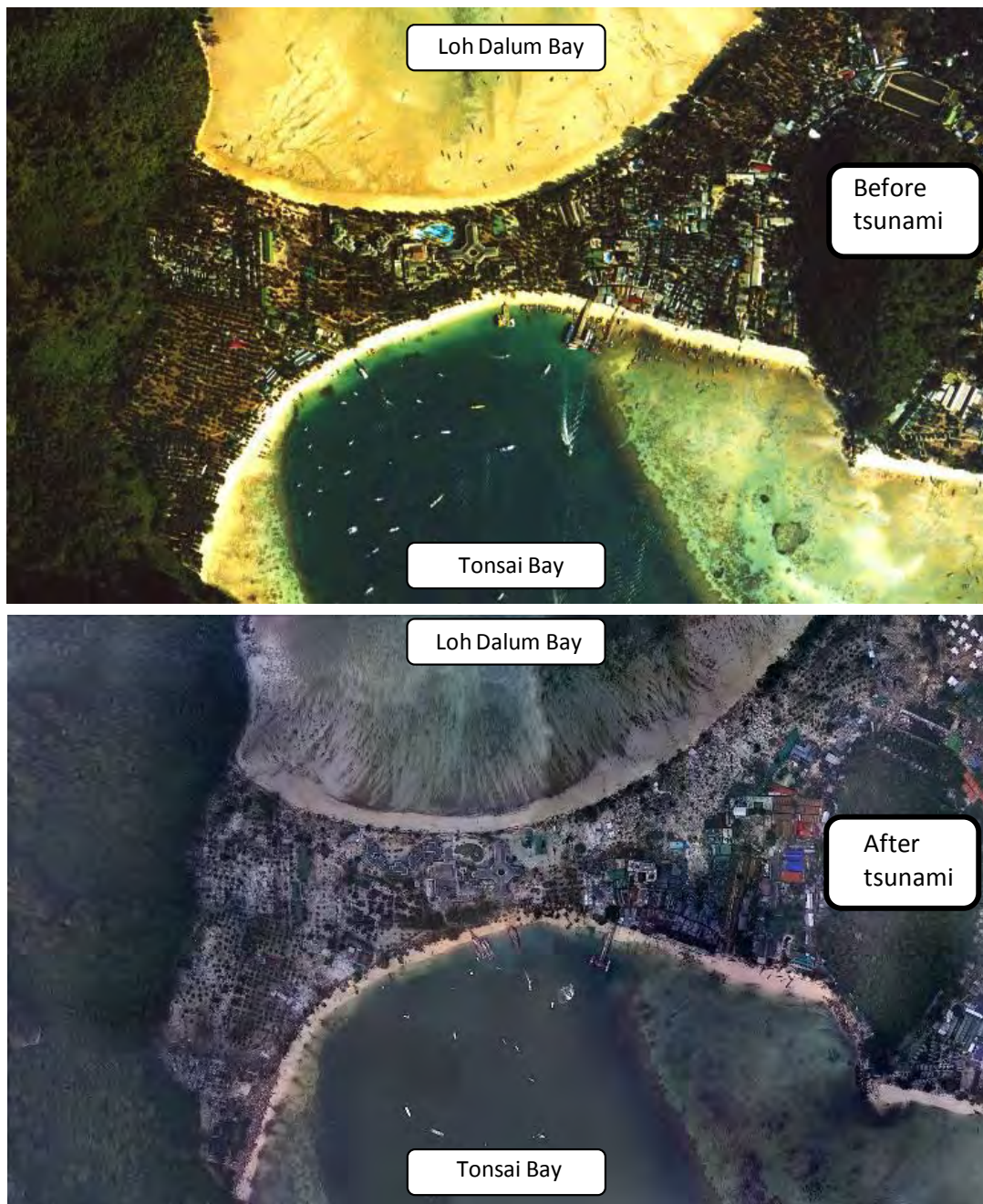
Source: Adapted from Department of Public Works and Town and Country Planning, Ministry of Interior, 2005.

Figure 5.12: Comparative aerial images showing Phi Phi Don before and after the tsunami

As illustrated in Figure 5.13 and Figure 5.14, the island is H-shaped with two high rocky headlands on the eastern and western sides, connected by a narrow sand isthmus that reaches 1.5 metres above sea-level (Figure 5.14) (Dalrymple and Kriebel, 2005; Ioualalen et al., 2007). The cliffs that rise steeply from the sea, to a maximum elevation of 185 metres (Figure 5.13), are the remnants of ancient coral reefs, a geo-morphological feature that is common in the Andaman Sea and other parts of Southeast Asia (Rossetto et al., 2006: 136). The strip is only 100 metres wide at its narrowest point, increasing up to 1,000 metres at the base of the cliffs at each end (Ioualalen et al., 2007).

Following the large recession of the sea (most notable in the very shallow Loh Dalum Bay), the island was struck from the west, forcing the long tsunami wave to refract and diffract first into the north-facing Loh Dalum Bay, causing complete inundation of the isthmus (Dalrymple and Kriebel, 2005; Ioualalen et al., 2007; Siripong, 2006). Another part of the same long wave wrapped around the western side of the island and struck Tonsai Bay from the south, washing the debris back over the island and causing high fatalities (Dalrymple and Kriebel, 2005; Ioualalen et al., 2007; Siripong, 2006). Figure 5.14 portrays the dual impact of the tsunami waves on Phi Phi Don and maximum run-ups heights. The shallowness of Loh Dalum Bay resulted in higher run-ups reaching close to seven metres, whilst the deeper Tonsai Bay recorded maximum run-ups of just half the height at 4.58 metres (Bell et al., 2005a; Kawata et al., 2005).

Other physical characteristics of the surrounding marine environment also influenced the impact of the waves. The positioning of Phi Phi Le helped to shield Tonsai Bay from the full force of the tsunami (Kawata et al., 2005). Furthermore, rapid assessments undertaken by UNEP (2005) and model simulations (see Kunkel et al., 2006) suggest that the fringe reefs surrounding Phi Phi Don (depicted by grey „frills" in Figure 5.13) played a role in sheltering the island from the full brunt of the waves. The steepness of the reef crests and width of the reef flats were thought to have lessened the power of the waves (Cochard et al., 2008).
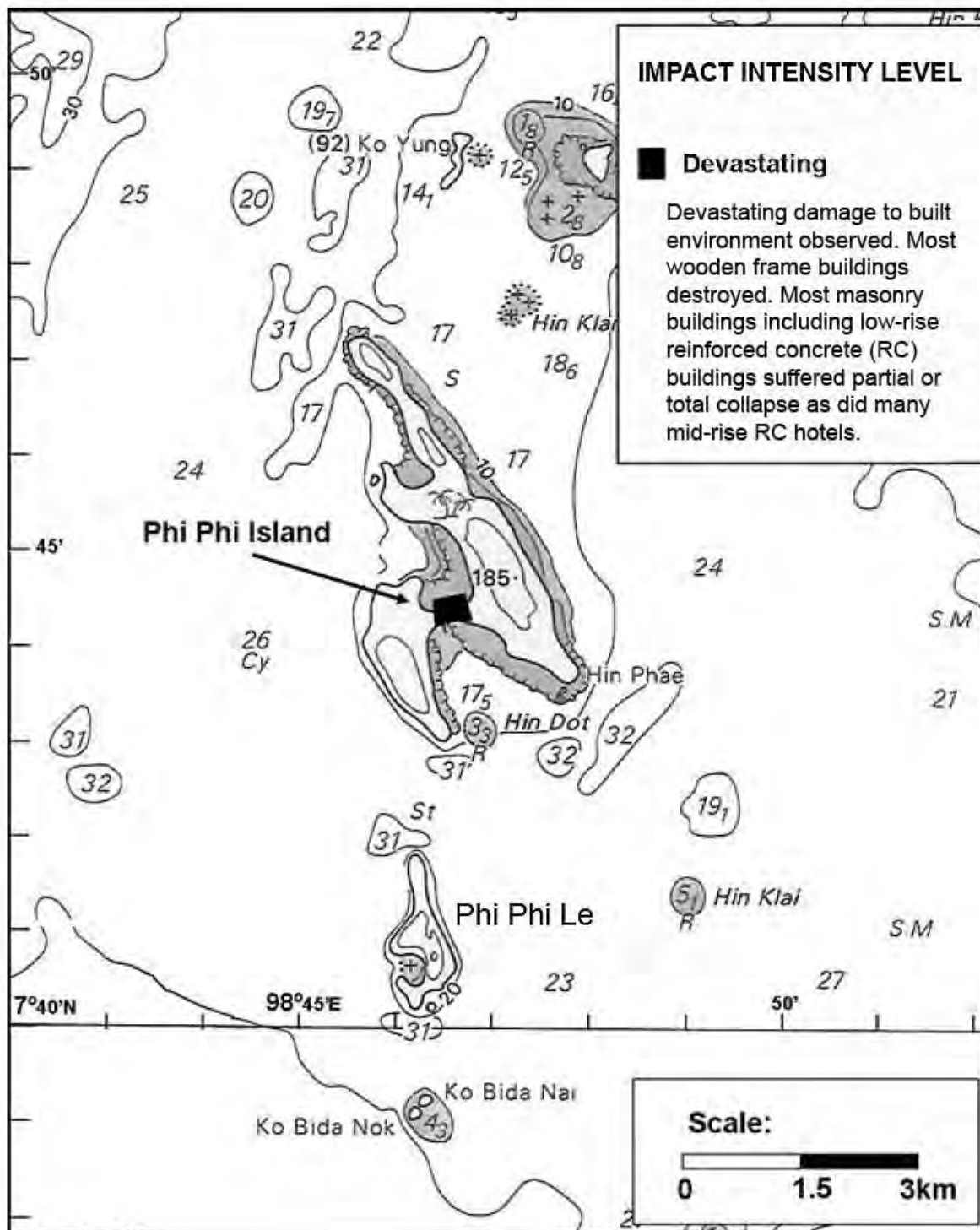
Source: adapted from Rossetto et al. (2007: 112).

Figure 5.13: Bathymetry and topography of Phi Phi Don and observed intensity of impact
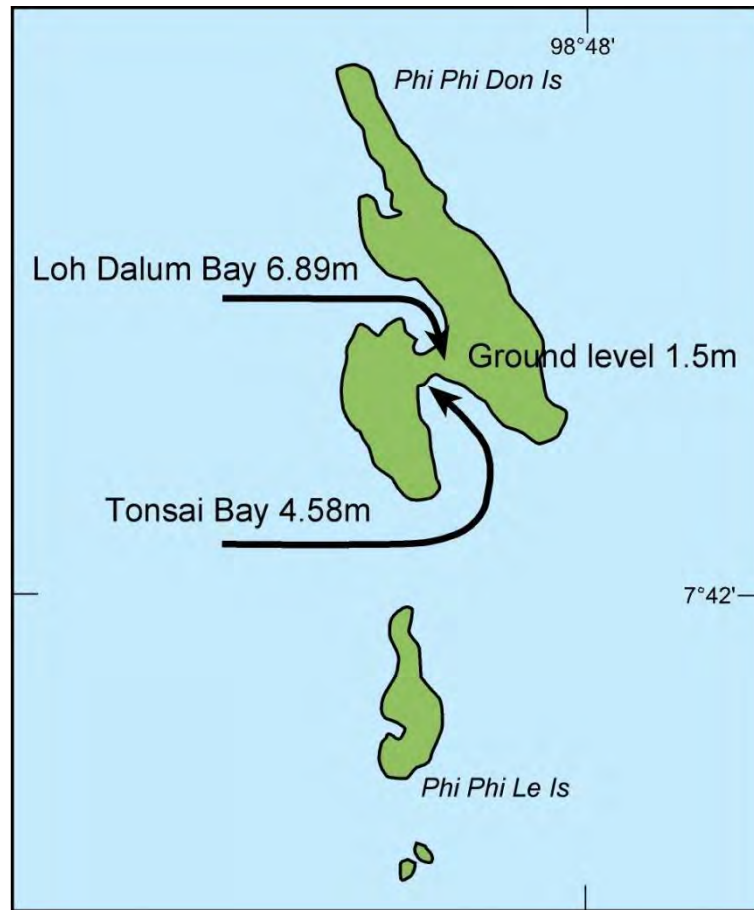
Source: adapted from Kawata et al. (2005: 69).

Figure 5.14: Tsunami heights and wave direction at Phi Phi Don

5.3 Development patterns, type and orientation

Development patterns, including location and density of human settlements along with characteristics of the built environment, play a crucial role in determining the vulnerability of place-based populations (Birkmann, 2006; Varley, 1994), particularly for those engaged in and reliant upon tourism (Cohen, 2007). The positioning of tourism development in ecologically sensitive and hazard-prone areas, and destination remoteness are identified in Chapter 2 as key contributors to destination vulnerability, necessitating their inclusion in the DSF (see Figure 5.1). But the choice of destination location and the type of development found in destinations is not random. It reflects the desires of a destination‟s main markets (external to the destination) and the interpreted expressions of these by industry stakeholders that are found at the local, regional, national, and international level. These influences are captured in the *place* and *scale* elements of the DSF, shown in Figure 5.1.

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As noted in Chapter 4, Patong, Phi Phi Don, and Khao Lak offer holiday experiences that revolve loosely around „sun, sea, and sand" and the exoticness of Thailand, giving tourists a chance to escape from the grind of every day life. Whilst the explicit experience and interpretation found in each of the three destinations is slightly different, the beach surrounded by striking tropical escarpments are characteristics that Patong, Phi Phi Don, and Khao Lak have in common. These beaches also happen to be very low-lying and hazard-prone areas that increase the host populations" vulnerability to shocks. Cioccio and Michael stress that:

> The problem for many in the tourism industry, of course, is that the risk from natural hazards exists because their choice of natural habitat makes them vulnerable; but often these risks are not routinely apparent until some sudden environmental event makes them visible (Cioccio and Michael, 2007: 5).

Sanandang (2004) and Miller *et al.* (2005) concur, observing that extreme events like the 2004 tsunami blatantly demonstrate that environmental degradation, along with poorly planned and inappropriate development, increase community vulnerability to shocks. Placing this problem within an Southeast Asian context, Wong (2000) reasons that inappropriate development in Southeast Asia is a direct outcome of a lack of understanding of coastal processes on the part of tourism developers, which in turn, increases vulnerability levels (Pelling, 2003; Wilhite et al., 1987; Wisner et al., 2004). Woven into this mix of multi-scaled influences are the policies and actions of localised governmental bodies (from the national level through to the sub-district level) that oversee tourism development in Thailand, a point that becomes clear in Chapters 6 and 7. Comparative findings from Khao Lak, Patong Beach, and Phi Phi support these claims.

There is a direct correlation between development type and the extent of damage sustained by the built environment as a result of the 2004 tsunami (Saatcioglu et al., 2006). Capitalising on the water views, much of the tourism development found in Khao Lak, Patong, and Phi Phi Don is located along or close to the beach. However, the proximity of the resorts to the exposed beach, coupled with the types of structures built, heightened their exposure to the tsunami (Cohen, 2007; Rossetto et al., 2006).

Prior to the tsunami, building regulations stipulated a 30 metre setback from the high water mark but they did not include detailed structural codes (Bell et al., 2005a; Calgaro, 2005). Southern Thailand is classified as a non-seismic-prone region and as such buildings have not been designed for earthquake loading or tsunamis (Lukkunaprasit and Ruangrassamee, 2005; Rossetto et al., 2006). Ministerial Regulation No. 6, B.E. 2527 [5] stipulates a relatively low wind loading of 0.5 kilopascals (kPa) for the lower 10 metres and 0.8 kPa for the next 10

metres (for low rise buildings) (Lukkunaprasit and Ruangrassamee, 2005; Rossetto et al., 2006). Wave velocities in Khao Lak ranged from six to eight metres per second, which exerted immense hydrodynamic pressure (20 to 30 kPa) on buildings and obstacles that lay in the path of the incoming waves (Bell et al., 2005a; Matsutomi et al., 2005; Warnitchai, 2005). To put this in perspective, this is at least 15 times greater than the lateral wind loading applied to a structure in non-cyclonic regions (Standards Association of Australia, 2002). Consequently, most of the resorts and buildings in Khao Lak sustained heavy damage, culminating in a 90 percent loss of room capacity (Thanawood et al., 2006; Warnitchai, 2005). Returning back to Figure 5.5 in Section 5.2, Rossetto *et al.* (2006) classify the impact intensity experienced by Khao Lak as „Devastating (VI)", indicating the most extreme level of damage observed on the built environment[††††]. Most wooden frame buildings were destroyed. The majority of masonry buildings including low-rise reinforced concrete (RC) buildings suffered partial or total collapse (Rossetto et al., 2006).

Wave velocities at Patong Beach were considerably less at three to four metres per second (Matsutomi et al., 2005) as were levels of structural damage. All properties along Patong"s beachfront road (Thaweewong Road shown in Figure 5.8) sustained some degree of damage from the tsunami, most of which was confined to the ground floors and basements (Rossetto et al., 2006). Most of the observed damage was from flooding, with little structural damage evident (Rossetto et al., 2006). Given that very few low-rise RC buildings and mid-rise RC hotel and resorts suffered structural damage, Rossetto *et al.* (2006) classified the impact intensity of the tsunami as „Destructive (IV)", two grades less than Khao Lak. Wave velocities at Phi Phi are unknown but the damage was extensive; 70 percent of the island was severely damaged (Guy Carpenter, 2005). The intensity of the tsunami"s impact on the built environment was also classified as „Devastating (VI) by Rossetto *et al.* (2006) as shown in Figure 5.13 in the previous section. Mirroring destruction patterns in Khao Lak, most wooden frame buildings were destroyed. Again, the majority of masonry buildings suffered partial or total collapse (Rossetto et al., 2006).

Such large differences in damage patterns between the three destinations can be explained by the substantial variations in the dominant building types and materials used, building orientations, structure and foundation types, and overall development patterns (Bell et al., 2005b; Dalrymple and Kriebel, 2005; Dominey-Howes and Papathoma, 2007; National

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[††††] Rossetto *et al.* (2006: 151) use six categories to rank the intensity of the impact of the tsunami on the built environment: Weak (I), Light (II), Strong (III), Destructive (IV), Very Destructive (IV), and Devastating (VI). It is beyond the scope of this thesis to explain the differences of each category but an explanation of the key characteristics of Devastating (VI) as the most extreme level of damage observed in Sri Lanka and Thailand and Destructive (IV) is given here to enable a comparison between structural damage levels found in Patong, Phi Phi Don, and Khao Lak.

Science Foundation, 2005b; Warnitchai, 2005). Few wooden frame and bamboo structures survived the impact of the tsunami, particularly in Khao Lak and Phi Phi Don where water depths exceeded three metres (Rossetto et al., 2006). Their destruction produced hazardous debris that claimed many lives, as it was pushed along by the powerful waves (Bell et al., 2005b; Dalrymple and Kriebel, 2005; National Science Foundation, 2005b). These buildings were commonly smaller buildings ranging in use from bungalows to restaurants and resort service amenities (Bell et al., 2005a).

Wooden structures were common-place in Khao Lak, particularly in Bang Niang where the largest devastation occurred[28,56]. Low-rise wooden structures also dominated Loh Dalum Bay in Phi Phi Don. None of the estimated 300 well-built wood cottages were left standing at Loh Dalum Bay (Ioualalen et al., 2007), with one resort owner losing approximately 225 wooden bungalows at Loh Dalum Bay alone[278]. The reason for the prevalence of these structures in Khao Lak and Phi Phi Don lie with the preferences of the main tourist markets who were attracted to both destinations. The wooden bungalow structures (both the more ornate and rustic versions) personify the sought „tropical paradise" ideal for Western tourists, particularly nature lovers who frequent both destinations[18,28,56,215,237,241,273,278]. Liaisons between destination accommodation providers and international tour operators (including inspections) ensure that the product the tour operator is selling is directly comparable with the accommodation they are selling, with some tour operators insisting on particular building features before agreeing to sell rooms in the hotels[18,78,109].

After the tsunami, some lending institutions such as the SME Bank also began to include building type stipulations in their lending conditions – encouraging multi-storey structures with more rooms per square metre of land - to try and maximise resort profits and their capacity to repay loans quickly[28,78]. These collective actions again highlight the intricate connection between building types and locations in tourism destinations and multiple stakeholders whose actions taken at different scales are driven by different perceptions and agendas.

Poor foundations in single-storey structures proved to be another factor underlying high damage patterns in Khao Lak and Phi Phi Don[273]. Most buildings in the Andaman Region are non-engineered and have shallow spread footings less than one metre below ground (Bell et al., 2005b; Dalrymple and Kriebel, 2005; Lukkunaprasit and Ruangrassamee, 2005; Warnitchai, 2005). Limited enforcement of engineer-designed construction plans by local government bodies further lowered minimum structural standards (Bell et al., 2005a). Severe scouring of the supporting sand underneath these shallow spread footings was very

common, leading to widespread foundation failure in all three destinations. Several buildings situated along Tonsai Bay at Phi Phi floated off their spread footings and were displaced from their original positions (Warnitchai, 2005). This is evident in Figure 5.15. The severe scouring was caused by highly turbulent and strong-tsunami induced currents (Warnitchai, 2005). Conversely, elevated buildings that allowed water to flow under the structure escaped detrimental damages, as did buildings with solid walls that were perpendicular to the ocean (Dalrymple and Kriebel, 2005; National Science Foundation, 2005b).

Source: Warnitchai (2005: 6).

Figure 5.15: Collapse and displacement of wooden bungalows situated along Tonsai Bay, Phi Phi Don

Brick buildings were also heavily damaged, yet those with reinforced concrete (RC) frames were more likely to remain structurally sound (National Science Foundation, 2005b; Warnitchai, 2005). Averaging 100 millimetres thick, the frame-infill masonry walls set within RC frames could not withstand the high hydrodynamic pressure (shown in Figure 5.16) or the impact of hazardous floating debris carried by the strong currents (Kawata et al., 2005; Warnitchai, 2005). Debris ranged from wood, cars, furniture, trees, metal, to cars and boats, as shown in Figure 5.17 (Bell et al., 2005a; Warnitchai, 2005). The great amount of debris carried along by the tsunami not only transmitted more force onto built structures, but also claimed many lives (Warnitchai, 2005). RC structures founded on deep piles proved to be the most structurally sound. Most of the RC beachfront properties in all three destinations were

orientated to face the beach, featuring large sea-fronting windows which did little to resist the force of the wave or protect inhabitants. Entering the buildings through the large sea fronting windows, the force of the tsunami waves gutted the concrete structures but left the building structurally intact (Bell et al., 2005b; Dominey-Howes and Papathoma, 2007). Patong"s coastal landscape is dominated by multiple-storey RC structures, most of which escaped major damage and remained structurally intact (Rossetto et al., 2007). Large multi-storey RC resorts in both Khao Lak and Phi Phi also remained structurally sound but still inhabitable (Ioualalen et al., 2007). These structures played a lifesaving role by providing a vertical evacuation route above the waves[237].

Source: Emma Calgaro, February 2007.

Figure 5.16: A house at Laem Pakarang exhibiting collapsed masonry infill walls with RC frames intact

Source: Warnitchai (2005: 7).

Figure 5.17: A car lodged in the roof of a damaged masonry building in Laem Pakarang, Khao Lak

As mentioned in Section 5.2, overall development patterns found in Patong, Khao Lak, and Phi Phi Don played a major role in determining differential exposure levels. This was most obvious when comparing development patterns in Patong and Khao Lak. Patong"s built environment is very dense and dominated by concrete structures that cover most of the flatter crescent-shaped landmass that lies between the beachfront and the steep escarpment that borders the bay. Business stakeholders wishing to take full advantage of the destination"s popularity have created a high demand for land and shop space, resulting in the exploitation of all available space. The concrete structures that tightly lined the beachfront simply acted as a solid barricade against the tsunami waves. The waves pushed through the large windows that faced the beachfront but were prevented from reaching a long way past the first row of development and so caused limited structural damage. Instead, the water was funnelled down the many small sois (streets) that run perpendicular to the beach, damaging most of the small businesses that line the sois.

Development patterns in Khao Lak are markedly different. Khao Lak, as a new destination, is more sparsely populated, with large gaps between buildings. Prior to the tsunami, these large gaps were filled with lush tropical vegetation. This was particularly the case in Bang Niang where the landscape was dotted with small bungalow enterprises nestled amongst tropical shrubbery and small trees. This thin vegetation offered little resistance against the sheer volume of water that flooded Khao Lak"s low-lying terrain, resulting in near total devastation.

Development patterns on Phi Phi Don" narrow isthmus were very dense. But as noted earlier, the dominant type of buildings were low-rise wooden structures which increased the eventual damage. The dislodged debris from the broken structures destroying the remnants of those buildings that withstood the initial force of the water as it was pushed along by subsequent waves.

These findings have prompted the following five recommendations (Cochard et al., 2008, Eisner, 2005, Warnitchai, 2005):

    a. the limitation of wooden structures in coastal areas and the replacement of shallow spread footings with reinforced concrete deep pile foundations,

    b. the avoidance of new development along exposed sand spits and narrow and flat land strips,

    c. the redesign and reconfiguration of development along the coast that minimises future tsunami loss,

    d. the adoption of special precautions that protect critical infrastructure and property, and

    e. the introduction of evacuation plans and early warning systems.

An Indian Ocean Warning System has been set up (a point discussed further in Section 7.3.2.1 in Chapter 7), but the reconfiguration and redesign of development presents a challenge to tourism communities and planners, as they try to ensure development designs fulfil both safety standards and tourist demands for water views. Few businesses interviewed have changed the design of their buildings or materials used in the aftermath of the tsunami, despite recommendations outlined in the post-tsunami Andaman Tourism Recovery Plan (see Section 7.3.1.3).

5.4 Conclusions

Exposure to the tsunami and the resultant destruction levels experienced in Khao Lak, Patong Beach, and Phi Phi Don differed markedly. This chapter has shown that these differential exposure levels were due to two overarching factors that feature in the *exposure dimension* of the DSF presented in Figure 5.1: the unique biophysical characteristics of Patong, Phi Phi Don, and Khao Lak, coupled with the location and nature of their built environments. A comparison of the biophysical characteristics revealed substantial place-based differences in geophysical characteristics, including ocean bathymetry, differences in on-shore elevation, and the absence of significant natural barriers.

The tsunami reached a maximum run-up height of nine metres in Patong, but the steeper on-shore terrain and the high density of concrete structures that line the beachfront minimised inundation distances and extensive damage to on-shore development. Run-up heights and inundation distances experienced in Khao Lak where the most extreme, due in part to a shallow near-shore slope, low on-shore elevations, and the types of structures (many of which were sparsely-populated wooden structures), as opposed to the dominance of reinforced concrete structures found in Patong‟s high density settlement). Maximum run-up heights in Phi Phi were not as extreme as those experienced in Khao Lak, but the shallowness of the off-shore bathymetry and the shape of the island caused the wave to refract around the island, producing two bodies of water that met in the middle and submerged the flat and highly developed isthmus. Also the island, like Khao Lak, was dominated by smaller wooden bungalows and simple structures built on shallow footings that were easily dislodged by the force of the waves. The force of the multiple waves coming from both sides of isthmus transformed the remnants of these feeble structures into multiple battery rams, as the water pushed the debris from one side of the isthmus to the other.

When natural hazards occur, particularly ones as colossal and far-reaching as the 2004 tsunami, it is easy to overlook those highly contextualised socially-constructed root causes and processes that turned a natural hazard into a disaster. But this chapter also reveals that decisions on destination settlement locations, the form the built environment takes, and their structural characteristics, reflect the stakeholder preferences, dominant value systems and stakeholder priorities, and risk perceptions that manifest at multiple scales of social organisation. The location of destination settlements in Patong, Phi Phi Don, and Khao Lak, all of which are ecologically-sensitive, hazard-prone, and (in the case of Khao Lak and Phi Phi Don) remote, was not random. These locations were chosen for their beautiful natural settings that are coveted by Western tourists looking for an exotic escape to paradise.

The tourists" desire to be located next to the beach and their culturally-loaded perceptions of paradise also influenced the types of buildings that dominated the landscape. Accordingly, tour operator and localised business stakeholder interpretations of these desires are reflected in building characteristics, such as large windows facing the near-by beach and the co-existence of small wooden bungalows alongside larger luxurious resorts strengthened by reinforced concrete. Tour operators and financing institutions operating at the international and national levels also directly influence the characteristics of the built environment in a given place. However, the importance of national and localised building codes and policies cannot be overstated. Buildings in Thailand were not designed to withstand earthquakes or tsunamis. This was deemed unnecessary as southern Thailand is classified as a non-seismic-prone region. These oversights, as well as the myriad of multi-scaled influences from international tourists and operators to national lending institutions and local businesses, created high levels of exposure in Khao Lak and Phi Phi. High levels of development, the high density of that development, and the more robust buildings found in Patong lessened its exposure to the tsunami, but created other problems that will be explored in Chapter 6. Together these findings reaffirm that destination exposure levels are influenced not only by the physical characteristics of a place, but also by contextualised factors and processes - expectations of tourists, cultural interpretations of tourist desires, and multiple agendas - that reach beyond the destination as shown in Figure 5.1.

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