

Sounding the alarm: Is the Sri Lankan tourism sector prepared for
climate change?

by

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Author's Declaration

I hereby declare that I am the sole author of this thesis. This is a true copy of the thesis, including any required final revisions, as accepted by my examiners.

I understand that my thesis may be made electronically available to the public.

Abstract

The United Nations has concluded that climate change is unequivocal and without a rapid decarbonization of the global economy there will be risks of severe, pervasive, and irreversible impacts. The World Bank also emphasized that no scenario exists by which the Sustainable Development Goals of 2030 could be met in a world transformed by climate change. Climate change has already affected the sustainability and competitiveness of global tourism yet it remains to be one of the least prepared economic sectors for the risks and opportunities of climate change. Several studies have highlighted persistent and significant regional knowledge gaps within the scholarship on tourism and climate change – particularly in the South and South-East Asia sub-regions where global tourism is expected to grow the fastest by 2030. Consequently, it is unclear the scale and scope of potential climate change impacts on tourism in these countries or how the tourism sector is planning for climate change in policy and practice.

Tourism is Sri Lanka's third largest economic sector and has been earmarked as one of the most vulnerable sectors to climate change by the Ministry of Mahaweli Development and Environment. This thesis fills the regional knowledge gap and examines the preparedness of Sri Lanka's tourism sector at the national scale (Phase I) and the destination level (Phase II). Phase I established the state of knowledge of climate change risks and impacts facing the tourism sector and reviewed the policy coherence between Sri Lanka's national tourism strategy and climate adaptation plan. Phase II examined tourism stakeholder perceptions' of climate change and identified barriers to climate adaptation at the embedded case study site (Unawatuna).

This study found that Sri Lanka's tourism sector is not prepared for climate change. The policy review indicated that climate change receives minimal attention in the tourism strategy and therefore does not enable stakeholders to take a proactive and planned approach to adaptation. Interviews suggested that despite being acutely aware of changes in the climate system, climatic conditions were not a priority in the context of other more immediate challenges among tourism stakeholders in Unawatuna. In light of these findings, this thesis recommends the following actions: 1) Conduct research studies to improve understanding of sector relevant climate change risks and impacts; 2) Communicate climate change as a local problem to tourism stakeholders; and 3) Strengthen institutional capacities to mainstream adaptation. These findings can be used to inform future tourism policies and adaptation plans in Sri Lanka and can offer insight on mainstreaming adaptation in other developing countries facing similar challenges.

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Dedication

這篇論文是獻給我的祖父母的：

譚津 黃雄
馮仲嬌 蔡金鳳

This thesis is dedicated to my grandparents. Your hardships do not go on unnoticed. Thank you for paving this path for me.

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List of Abbreviations

3S	Sun, Sand, and Sea
ADB	Asian Development Bank
APD	Air Passenger Duty
AR5	Fifth Assessment Report
CCD	Coast Conservation Department
CCS	Climate Change Secretariat
CECI	Centre for International Studies and Cooperation
CEB	Ceylon Electricity Board
CEF	Clean Energy Future
CO ₂	Carbon Dioxide
CORSIA	Carbon Offsetting and Reduction Scheme for International Aviation
DMC	Disaster Management Centre
DSD	Divisional Secretariat Divisions
GDP	Gross Domestic Product
GHG	Greenhouse Gas
ICAO	International Civil Aviation Organization
IPCC	Intergovernmental Panel on Climate Change
LTTE	Liberation Tigers of Tamil Eelam
MICE	Meetings, Incentives, Conferences, and Exhibitions
MMDE	Ministry of Mahaweli Development and Environment
MoT	Ministry of Tourism and Christian Religious Affairs
NAP	National Adaptation Plan
NEM	North-East Monsoon
NDC	Nationally Determined Contributions
NWG	National Working Group
OECD	Organization for Economic Cooperation and Development
PAC	Provincial Adaptation Cells
RADA	Reconstruction and Development Agency
RCP	Representative Concentration Pathways
RTB	Ruhunu Tourist Bureau

SCC	Sectoral Climate Cells
SDG	Sustainable Development Goals
SIDS	Small-Island Development States
SLCB	Sri Lanka Convention Bureau
SLITHM	Sri Lanka Institute of Tourism and Hotel Management
SLTPB	Sri Lanka Tourism Promotion Bureau
SLTDA	Sri Lanka Tourism Development Authority
SVP	Sector Vulnerability Profile
SWM	South-West Monsoon
TAFREN	Task Force for Rebuilding the Nation
TSP	Tourism Strategic Plan 2017-2020
TTP	Tourism Transformative Projects
UN	United Nations
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UNWTO	United Nations World Tourism Organization
WHO	World Health Organization
WMO	World Meteorological Organization
WTTC	World Travel and Tourism Council
WUSC	World University Services of Canada

CHAPTER 1

INTRODUCTION

1.1 Study context

Tourism is one of the fastest growing economic sectors in the world, contributing an estimated 10.4% to the global gross domestic product [GDP] and 9.9% of total employment in 2017 (World Travel and Tourism Council [WTTC], 2018). In the same year, total exports from international tourism reached US\$1.6 trillion, or roughly US\$4 billion per day (United Nations World Tourism Organization [UNWTO], 2018). As such, tourism is highly valued as a top export sector and an important economic development strategy in many developing countries (WTTC, 2017; UNWTO, 2018). Due to better air transport connectivity, improved product and service quality, enhanced governance, and prioritization of tourism in the economy, South Asia and South-East Asia will be the fastest growing sub-regions by 2030 (UNWTO, 2017; WTTC, 2017). The United Nations ([UN], 2015) has also given greater attention to tourism for its potential to contribute to all of the 17 Sustainable Development Goals (SDGs) given its perceived environmental, economic, social, and cultural benefits. In particular, the UNWTO (2015) emphasizes tourism's significance to promoting decent work and economic growth (SDG 8), responsible consumption and production (SDG 12), and life below water (SDG 14).

The Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5) concluded that climate change is one of the most pressing issues of the 21st century and poses an unprecedented threat to development around the world (2014a). The UNWTO, United Nations Environment Programme (UNEP), and the World Meteorological Organization (WMO) consider climate change as “one of the greatest challenges of our time” (2008, p.19). The World Bank (2015) recently emphasized that no scenario exists by which the SDGs could be met in a world transformed by climate change. The WTTC (2015) also stated that in the next 20 years, the tourism industry must focus on fully integrating climate change into the business strategy, transitioning to a low carbon economy, and strengthening resilience against climate risks at the local level. The implications of climate change for global tourism will be “far-reaching in the decades ahead” (Scott, Gössling & Hall, 2012b, p.216), therefore addressing climate change is “a prerequisite to sustainable tourism” (Scott, 2011, p.27). Climate change risks and exposure are unevenly distributed around the world (IPCC, 2014a) and within the tourism sector, vulnerability

hotspots are concentrated in Africa, the Middle East, South Asia, Small Island Developing States (SIDS) and the Caribbean, and the Indian and Pacific Oceans (Scott and Gössling, 2018). The cost of inaction, including reduced growth and loss of tourism assets, will also be greatest among these regions (Scott and Gössling, 2018).

Despite overwhelming evidence that the global climate system is changing, tourism remains one of the least prepared sectors for the risks and opportunities of future climate change (KPMG, 2008). While a substantial amount of research has emerged in this field, the existing body of literature has important and persistent regional gaps and has been criticized for being extremely limited in areas where tourism is expected to grow the fastest in the next few decades (Hall 2018; Scott, Hall & Gössling, 2015). The impacts of climate change on tourism are expected to be significant in developing countries, yet the number of tourism-specific studies remains few.

Sri Lanka is a lower-middle income country located south of India, with a 2017-estimated population of 21.4 million people (World Bank, 2018b). Despite a turbulent history, marked by a 26-year long civil war and the 2004 Indian Ocean tsunami, Sri Lanka has done a remarkable job leveraging tourism as a way to “[regain] missed opportunities” (Fernando, Bandara & Smith, 2013, p.685). In 2018, tourist arrivals exceeded 2.3 million (Sri Lanka Tourism Development Authority [SLTDA], 2018) and contributed 11.6% to the total GDP as the third largest foreign exchange earner in the country (WTTC, 2018). To safeguard tourism’s long-term growth, the Prime Minister’s Office (2017) has pledged to “conserve the environment to ensure sustainability of the tourism industry” through 2025 (p.23). However, at the same time, tourism is recognized as one of the most vulnerable sectors to climate change by the Climate Change Secretariat (CCS) and the Ministry of Mahaweli Development and Environment ([MMDE], referred to here as the Ministry of Environment) (MMDE, 2011; CCS & MMDE, 2016; MMDE, 2016b). Coastal tourism is the largest market segment in Sri Lanka (SLTDA, 2017c) and is considered the most vulnerable to three climatic-drivers of change: sea level rise, ocean temperature, and ocean acidification (Wong et al., 2014).

While the guiding philosophy of Sri Lanka’s tourism strategy is to “drive benefits to communities and the country that are socially inclusive and environmentally responsible” (Ministry of Tourism and Christian Religious Affairs [MoT] 2017, p.11), little attention is paid

to the current and future impacts of climate change (Buultjens, Ratnayake & Gnanapala, 2018), including how tourism stakeholders are or should be responding to climate change risks.

1.2 Study goals and objectives

Given notable gaps in the literature in terms of how climate change will potentially impact tourism in Sri Lanka and the broader South and Southeast Asia sub-regions, the overarching research question of this thesis is: **Is the Sri Lankan tourism sector prepared for climate change?** Responding to this question from a policy and community perspective is important considering that climate adaptation is a cross-sectoral and “whole-of-government activity” (Ahmad, 2009, p.1) and that climate risk perception is an important factor for determining public engagement, support, and outcomes of adaptation policy and implementation (Vignolia, Klinsky, Tam et al., 2012). The study examines this research question at the national level as well as with a detailed embedded case study of the economically important and potentially highly vulnerable coastal tourism market segment. The following four research objectives guide this thesis:

National Sector Scale

1. Establish the state of knowledge of climate change risks and impacts facing the tourism sector in Sri Lanka;
2. Review the national policy coherence between national tourism strategies and climate change communications and adaptation plan to understand how the sector is preparing for climate change;

Embedded Destination Case Study (Unawatuna)

3. Examine stakeholder perception of climate change and possible adaptation strategies at the destination community scale;
4. Identify barriers to climate adaptation at the destination community scale and provide recommendations for enhancing policy coherence to mainstream climate adaptation.

1.3 Structure of thesis

The thesis is organized into seven chapters. The introductory chapter has outlined the study context and research objectives as a means of justification for the research. Chapter 2 reviews the literature pertaining to the potential climate change impact on the tourism sector globally, with a particular focus on coastal tourism. Chapter 3 provides an overview of tourism

development in Sri Lanka and the major challenges it faces currently, then outlines the anticipated climate risks facing the coastal tourism segment. Chapter 4 describes the multi-staged qualitative methods that were undertaken for this research and the challenges and considerations of conducting research in a cross-cultural setting. Chapter 5 presents the findings of the national policy review to understand how the Sri Lankan tourism sector is preparing for climate change. Chapter 6 presents the findings of the embedded coastal tourism case study in Unawatuna, including climate change risk perceptions of tourism stakeholders and their perspectives on possible adaptation strategies. Chapter 7 concludes with how the findings met the research objectives and advanced sectoral knowledge gaps, and provides recommendations for future research.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This chapter is divided into five sections. The first section provides an overview of global observed and anticipated climate change to the end of the 21st century. It then outlines the concepts of vulnerability, adaptive capacity, and adaptation that are central to this thesis. The second section outlines global tourism growth and regional trends. Concepts of sustainable tourism as it relates to the 2030 United Nations SDGs are discussed. The third section introduces the climate change impact pathways conceptual framework developed by Scott, Hall, and Gössling (2012a) to illustrate how climate change will impact the future of coastal tourism. The fourth section discusses the vulnerability of coastal tourism to sea level rise and storm surges, ocean temperature and acidification, and human activities. Finally, the last section explores climate change adaptation measures and reviews the literature about the challenges facing adaptation implementation within the tourism sector.

2.2 Climate change

2.2.1 Climate change observations and projections through the 21st century

As the scientific body of the WMO and the UNEP, the IPCC is “the world’s most reliable source of information on climate change” and represents the consensus of the international scientific community from 195 countries (Science, 2001, p.1261). Since forming in 1988, the IPCC has released five assessment reports on the state of knowledge related to climate science, impacts and future risks, adaptation, and emission trends and mitigation needs to avoid dangerous interference with the global climate system. The IPCC (2014c, p.120) defines climate change as:

a change in the state of the climate that can be identified (e.g., by using statistical tests) by changes in the mean and/or the variability of its properties and that persists for an extended period, typically decades or longer. Climate change may be due to natural internal processes or external forcings, such as modulations of the solar cycles, volcanic eruptions and persistent anthropogenic changes in the composition of the atmosphere or in land use.

The AR5 concluded that climate change is unequivocal due to anthropogenic greenhouse gas (GHG) emissions and can no longer be explained by natural variation alone (IPCC, 2014a). The multi-decadal warming of land and ocean temperatures has affected nearly the entire globe in the past century, with each of the last three decades being progressively warmer than the previous decade since 1850 (IPCC, 2014a). Global annual average temperatures have increased by approximately 1°C over pre-industrial levels, with a likely range of 0.8°C to 1.2°C (IPCC, 2018), and with 16 of the 17 warmest years since the late 1800s occurring between 2001 to 2016 (Wuebbles et al., 2017). More than 90% of the total excess heat energy between 1971 to 2010 has accumulated in the ocean, resulting in higher levels of ocean temperature warming and ocean acidification. Sea level rise has also surpassed the mean rate of increase during the last two millennia (IPCC, 2014a) with nearly two-thirds of global sea level rise caused by increase in ocean mass, primarily from glaciers and ice sheets, since 2005 (Wuebbles et al., 2017).

Changes in the climate system will continue to affect natural and human systems in ways that are “virtually impossible without the human influence on climate” (Scott et al., 2015, p.2). The AR5 uses Representative Concentration Pathways (RCP) to project radiative forcings, emission rates, and emission concentrations through 2100 (IPCC, 2014a). Each RCP corresponds to a different climate scenario, specifically a low emissions scenario (RCP2.6), intermediate emissions scenarios (RCP4.5 and RCP6), and a high emissions business-as-usual scenario (RCP8.5), characterized by a global population of 12 billion people, high energy intensity, absence of climate policies, low rate of technology development, and heavy reliance on fossil fuels (IPCC, 2014a; van Vuuren et al., 2011). Even if current levels of emissions were stabilized and reduced, existing emissions in the atmosphere would still lead to long-term changes in the climate system (IPCC, 2018). Under current rates of emissions, the IPCC (2018) estimates that global warming is likely to reach 1.5°C pre-industrial levels between 2030 and 2052, and will likely be 2.6 to 4.7°C by the end of the century (between 2081-2100) under a business-as-usual scenario (IPCC 2014; Hayhoe et al. 2017). Ocean acidification will continue to increase due to the amount of carbon dioxide (CO₂) intake from previous decades, with marine organisms, coral reefs, polar ecosystems increasingly vulnerable to changed ocean conditions (IPCC, 2014a). It is also virtually certain that sea level will rise between 79cm to 146cm under a business-as-usual scenario (Kopp et al., 2017) and will continue to do so beyond 2100 (IPCC, 2014a).

2.2.2 Key concepts in climate change adaptation

Established in 1992, the United Nations Framework Convention on Climate Change (UNFCCC) is an international treaty with the objective of preventing “dangerous anthropogenic interference with the climate system” (1992, p.4). The UNFCCC recognizes both mitigation and adaptation as responses to anthropogenic climate change although early climate change debates in the 1990s and 2000s were initially dominated by mitigation (Adger et al., 2009). Despite calls for policy focus, adaptation received less attention because “to admit the need to adapt sounds defeatist to negotiators and because adaptation seems more complicated than mitigation” (Parry, Arnell, Hulme et al., 1998, p.741). Indeed, early IPCC reports only paid “scant attention to adaptation, vulnerability, or equity” (Schipper, 2006, p.83). However, climate change adaptation was accepted as a necessary policy response following the 2001 Marrakesh Accords to the Bonn Agreement since mitigation alone would have limited progress with managing climate change and variability (Adger et al., 2009; Parry et al., 1998)

In December 2015, Parties to the UNFCCC adopted the Paris Climate Agreement at the 21st Conference of the Parties with the goal of limiting global average temperature increase to well below 2°C above pre-industrial levels (UN, 2015). Each country is expected to prepare, communicate, and maintain their adaptation efforts and emissions reduction targets through submissions of nationally determined contributions (NDCs) every five years (UN, 2015, Article 4). According to reports by the UNEP (2018) and IPCC (2018), signatories must implement their current NDCs and plan for more ambitious NDCs by 2020 in order to reduce the risks and climate change and to limit global warming to a maximum of 1.5°C by 2030. The following sections present the interrelated concepts of vulnerability, adaptation, and adaptive capacity that have been embraced by scholarship on the human dimensions of climate change.

2.2.2.1 Vulnerability

The concept of vulnerability has been applied to a variety of fields including natural hazards, political ecology, environmental change, and sustainable livelihoods (Adger, 2006; McCubbin, Smit & Pearce, 2015). In the climate change literature, the IPCC (2001) broadly defines vulnerability as the “degree to which a system is susceptible to, or unable to cope with, adverse effects of climate change” (p.995). There are two epistemological definitions of vulnerability: outcome vulnerability and contextual vulnerability (Füssel, 2009; O’Brien, Eriksen, Nygaard et al., 2007). Outcome vulnerability conceptualizes vulnerability as the product

of the projected biophysical impacts of climate change, offset by adaptation (O'Brien et al., 2007). This approach is also referred to as end-point interpretation since vulnerability is considered to be the remaining biophysical manifestation of the hazard after adaptation has taken place (Füssli, 2009). However, this approach does not consider a system's internal or external non-climatic stimuli that may contribute to the perceived or experienced vulnerability (Hopkins, 2014). On the other hand, contextual vulnerability, also referred to as the starting-point interpretation, is determined by a system's ability to cope with or manage external pressures using their social, political, economic, and environmental resources (O'Brien et al., 2007). This perspective acknowledges that there are several interacting layers of climatic and non-climatic factors that can either amplify or reduce vulnerability (Hopkins, 2014; Füssel & Klien, 2006). Access and availability of these resources are regulated by power systems, culture, governance structures, social norms, and human agency (Adger, 2006). Reducing vulnerability from the starting-point interpretation means altering the context in which climate change occurs in so that the system can better adapt to the changing conditions (O'Brien et al., 2007). Climate change vulnerability assessments has evolved from assessments that identify the multiple effects of climate change on a system to assessments that recommend strategies for minimizing risks associated with multiple climatic and non-climatic stresses (Füssel & Klien, 2006), such as McCubbin et al. (2015) climate change vulnerability assessment of Funafuti, Tuvalu. This thesis adopts the latter conceptualization of vulnerability as being highly contextualized, place-specific, dynamic, and differential (Adger, 2006).

2.2.2.2 Adaptive Capacity

The vulnerability of a system is reflective of the exposure and sensitivity of a system to hazardous conditions and the ability of the system to cope, adapt, or recover from such conditions (Smit & Wandel, 2006). Füssel and Klein (2006) define adaptive capacity as “the ability of a system to adjust to climate change (including climate variability and extremes) to moderate potential damages, to take advantage of opportunities, or to cope with the consequences” (p.319). Adaptive capacity is determined by external social, economic, political, and institutional, and technological factors and is therefore “context-specific, [varying] from country to country, from community to community, among social groups and individuals, and over time” (Smit & Wandel, 2006, p.287). Adaptive capacity is also analyzed through a related concept of coping range, the notion that there is a certain range of climate stress that a system is

able to adapt to (Füssel, 2009; Smit & Wandel, 2006). Most systems have a threshold of what they can cope with based on their existing capabilities; a system's coping range fluctuates over time based on the adaptations that have been implemented (Smit et al., 1999; Smit & Wandel, 2006). Increasing adaptive capacity allows the system to respond to extreme events that would have otherwise been challenging, or impossible, within the original coping range (Smit & Wandel, 2006).

2.2.2.3 Adaptation

While mitigation addresses the cause of climate change, adaptation focuses on the consequence (Schipper, 2006). Adaptation is defined as the “adjustments in ecological-social-economic systems in response to actual or expected climatic stimuli, their effects or impacts” (Smit et al., 1999, p.199) in order to avoid harm or exploit opportunities (IPCC, 2014c). Adaptation can be further distinguished as proactive adaptation, “[taking] place before impacts of climate change are observed” and planned adaptation, “the result of a deliberate policy decision, based on an awareness that conditions have changed or are about to change and that action is required to return to, maintain, or achieve a desired state” (IPCC, 2007 p.869). Strategies that fail to adequately reduce vulnerability of a group or a sector (Barnett & O’Neill, 2010), or ignore best practices – such as stakeholder engagement, consensus, and adequate information (Moser & Ekstrom, 2010) – may lead to maladaptation. Barnett and O’Neill (2010) describe other types of maladaptation to climate changes it increases emissions of GHG, disproportionately burden the most vulnerable, have high economic, social, or environmental opportunity costs, reduce incentive to adapt, or foster path dependence. In fact, maladaptation may not only increase vulnerability but may also generate new risks at the local level (Barnett and O’Neill, 2010).

2.3 Tourism

The UNWTO (2013) defines tourism as “a social, cultural, an economic phenomenon which entails the movement of people to countries or places outside their usual environment for personal or business/professional purposes” (p.1). The notion that tourism is a source of economic growth and job creation is widely accepted as it directly and indirectly supports 9.9% of total employment worldwide and contributes to 10.4% of global GDP in 2017 (WTTC, 2018). The UNWTO’s long-term forecast for tourism growth from 2010 predicted that international

tourist arrivals would reach 1.4 billion in 2020; remarkably, this forecast was achieved in 2018 due to a combination of factors, including better air transport connectivity, improved product and service quality, enhanced governance and visa facilitation, and prioritization of tourism (UNWTO, 2019). As such, the UNWTO (2018) estimates that international tourist arrivals will reach 2.9 billion by 2030, with developing countries outpacing the growth of developed countries.

Though considered a late starter in tourism (Chon, 2015), the Asia-Pacific region has seen steady growth in recent decades (UNWTO, 2017). Tourist arrivals were less than 30 million in the 1980s (Chon, 2015) but reached 324 million arrivals by 2017 (UNWTO, 2018), making it the second largest tourism market in the world after Europe (UNWTO, 2017). South-East Asia experienced the highest sub-regional growth in 2017, an increase of an estimated 9 million international tourists (+9%) from the previous year (UNWTO, 2018), while China and Thailand had the strongest tourism growth at the country level (UNWTO, 2017). By 2030, tourist arrivals to Asia-Pacific are projected to reach 535 million, with South Asia experiencing the strongest sub-region growth (WTTC, 2017).

2.3.1 Sustainable tourism

Tourism is also a resource-intensive and environment-dependent sector that relies on the availability of natural, cultural, and human capital in the host country (Dodds & Butler, 2010). The movement towards sustainable tourism grew in response to greater public awareness about the environmental impacts of mass tourism and consumer demand for low-impact travel that promises conservation, education, and community participation (Hall, Gössling, Scott, 2015a). Accordingly, since the late 1980s, there has been a gradual shift towards advancing the understanding and discussion of sustainable tourism within academic circles and international tourism organizations (Bramwell, Higham, Lane et al., 2017; Ruhanen, Weiler, Moyle et al., 2015). Early on, Butler (1993, p.29) defined sustainable tourism as:

Tourism which is developed and maintained in an area (community and environment) in such a manner and 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 successful development and well-being of other activities and programmes.

The UNWTO and UNEP (2005) later defined sustainable tourism as “tourism that takes full account of its current and future economic, social and environmental impacts, addressing the needs of visitors, the industry, the environment and host communities” (p.12). While Butler’s (1993) definition of sustainable tourism is rooted in environmental conservation principles, the latter definition represents a broader conceptualization that highlights the multiple stakeholders and the need to strike a balance between the three interdependent dimensions of sustainable development – economic sustainability, social sustainability, and environmental sustainability (Hall et al. 2015a). Other studies have also pointed out that the concept of sustainable tourism includes cultural issues, governance structures, and political power as well (Lu & Nepal, 2009; Bramwell et al., 2017). Accordingly, the UNWTO and UNEP (2005) definition of sustainable tourism is rooted in the notion that that sustainable principles and management practices can be adapted to all forms and sizes of tourism in all types of destinations (Bramwell et al. 2017).

The concept of sustainable tourism first emerged in academic circles after the 1987 Brundtland Report (Ruhanen et al., 2015). The translation of Krippendorf’s (1987) seminal work, *The Holiday Makers: Understanding the Impact of Leisure and Travel*, became the first published work to argue for sustainable practices in tourism in the English-speaking world (Nepal, 2009). Since then, sustainability has dominated the academic tourism discourse (Bramwell et al., 2017), as evidenced by an increasing number of publications related to ‘sustainable development’ or ‘sustainability’ in tourism (Buckley, 2012; Lu & Nepal, 2009; Hall, Gössling, Scott, 2015). In particular, the *Journal of Sustainable Tourism* focuses exclusively on sustainable tourism research and is considered to be authoritative on the matter (Lu & Nepal, 2009). Publications in the *Journal of Sustainable Tourism* cover several tourism markets including eco-tourism, urban tourism, and cultural tourism, suggesting that sustainable tourism “is no longer considered to mean minimal disturbances in pristine areas only, but rather as an application in a range of natural and built settlements” (Lu & Nepal, 2009, p.14).

The growing interest of sustainable tourism in academia is matched by the interest of public and private sector stakeholders working towards the SDGs. The 2030 Agenda for Sustainable Development set out to create a transformative global framework to end extreme poverty, combat inequality and injustice, and mitigate climate change by 2030. Consisting of 232 indicators within 17 goals and 169 targets, the SDG’s bottom-up approach endorses a

consultative “people-centered development agenda” (Kumar, Hammill, Raihan & Panda, 2016, p.4) through the collaborative efforts of the civil society, government actors, and private sector stakeholders. While tourism contributes to all 17 SDGs, it is specifically mentioned in three targets (UN, 2015):

1. **SDG 8.9:** Devise and implement policies to promote sustainable tourism that creates jobs and promotes local culture;
2. **SDG 12.8b:** Develop and implement tools to monitor sustainable development impacts for sustainable tourism which creates jobs, promotes local culture, and products;
3. **SDG 14.7:** Increase the economic benefits of SIDS and LDCs from the sustainable use of marine resources, including through the sustainable management of fisheries, aquaculture and tourism.

The most number of papers published in the *Journal of Sustainable Tourism* relate to SDG 12, with regards to understanding consumer demand, attitudes and behaviours, opportunities for behavioural change, sustainability technology and innovation, and patterns of production (Bramwell et al., 2017). Other well-published areas include climate action (SDG 13), life below water (SDG 14), life on land (SDG 15), and peace, justice, and strong institutions (SDG 16) (Bramwell et al., 2017).

Despite the continued international focus on sustainable tourism, it has been criticized for being poorly implemented in practice (Buckley, 2012; Dodds & Butler, 2010) and is therefore “objectively further from being sustainable than ever” (Hall et al., 2015b, p. 492). Buckley (2012) argued that ‘hype’ about sustainable tourism is driven by “industry and political circles to persuade people that much is being done to achieve sustainable tourism” (p.19). While tourism has proven to be a promising growth sector, the argument around the paradox of tourism is that perceived economic gains are often accompanied by short- and long-term consequences for the surrounding communities and environment (Dodds & Butler, 2010; Hall et al., 2015a). Hall et al. (2015b) also emphasized that the continued promotion of tourism as a driver of economic growth worldwide – despite its growing contribution to global environmental and climate change – suggests that sustainable tourism development is a “significant policy problem” (p.293). The impact of tourism has led to greater strains on local infrastructure and resources, resulting in more case studies that report on tourism’s negative environmental impact, waste

mismanagement, and energy and water scarcity in destinations (Calgaro & Cochrane, 2009; Cole, 2012, 2014; Senevirathna, Edirisooriya, Uluwaduge et al., 2018). Furthermore, climate change is increasingly recognized as a major threat facing human-environment systems (IPCC, 2014a) including the tourism sector (Scott, 2011; Scott et al., 2012a, 2012b). According to Scott (2011), “how tourism responds to climate change is absolutely critical to the sustainability of tourism and should the sector retreat from climate change engagement, it would be to its substantial detriment” (p.17). As such, over the next 20 years, the WTTC (2015) has committed to fully integrating climate change into the business strategy, transitioning to a low carbon economy, strengthening resilience against climate risks at the local level. This commitment is also demonstrated in the WTTC and UNFCCC (2018) Common Agenda for Climate Action – marking the first time that the tourism industry has engaged with the UNFCCC at the global scale.

2.4 Coastal tourism and climate change

Coastal tourism is one of the largest and fastest growing tourism market segments in the world (Honey & Krantz, 2007) and relies on comfortable weather and climate conditions (Rutty & Scott, 2013) as well as optimal environmental features for sun, sand, and sea (3S) tourism (Uyarra, Cote, Gill et al., 2005). Consequently, coastal tourism is highly vulnerable to the cumulative impacts of climate change (Scott et al., 2012a), particularly sea level change, ocean temperature, and ocean acidification (Wong et al., 2014). Climate change impacts are occurring as scientists have predicted but the scale and rate of change are happening earlier and faster than expected (Bars et al., 2017; Brown & Caldeira, 2017; Kopp et al., 2017; Jevrejeva, Jackson, Grinsted et al., 2018). According to Scott, Simpson and Sim (2012c), “when 3S tourism becomes 2S, price structures, profitability, and destination image are put at risk” (p.894), so it is paramount that the relationship between climate risks and tourism is well understood by policymakers, tourism leaders, and local stakeholders – especially in destinations where tourism is anticipated to grow the fastest.

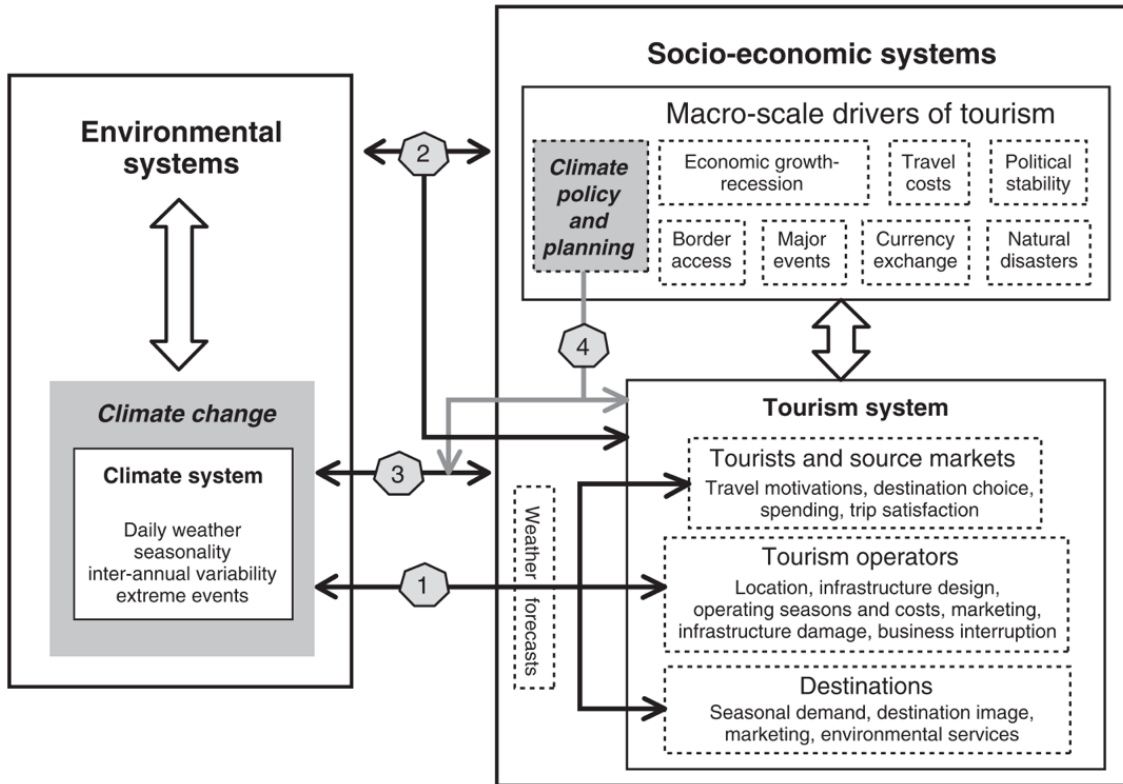
The relationship between tourism and climate change has been recognized by the UNWTO since the 2003 Djerba Declaration on Tourism and Climate Change (UNWTO et al., 2008; UNEP & UNWTO, 2012; IPCC, 2014a). With the adoption of the 2030 Agenda for Sustainable Development and the Paris Agreement, sustainability and adaptation are firmly understood to be the fiduciary responsibility of global businesses and government leaders.

Owing to the interdisciplinary nature of tourism and climate change, as well as its far-reaching implications for the global economy, the tourism-climate system has been described as a “multifaceted and complex” interface (Scott & Lemieux, 2010). There are two facets of the climate-and-tourism relationship. On one hand, tourism contributes to anthropogenic climate change through energy use and emissions (Gössling et al., 2008; Scott et al., 2012a). Tourism, including its related activities that occur along the supply chain (e.g. food and beverage, transport, accommodations), is estimated to emit 5% (UNWTO et al., 2008) to 8% of global GHG (Lenzen, Sun, Faturay et al., 2018). Three sub-sectors account for approximately 93% of total GHG emissions from tourism, including aviation (40%), road vehicle transport (32%), and accommodations (21%) (UNWTO et al., 2008). As tourism continues to grow, so too will tourism’s GHG emissions (Lenzen et al., 2018; UNWTO et al. 2008), with a recent report estimating that CO₂ emissions from travel and tourism will increase by 169% between 2010 and 2050 under a business-as-usual scenario (Gössling & Peeters, 2015). As such, the IPCC (2018) has stated that tourism must reduce its GHG emissions by 45% by 2030 (relative to the 2010 reference period) if it is to achieve net-zero emissions by 2050. However, policy ambitions, such as the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) under the International Civil Aviation Organization (ICAO), poses potential risks for some destinations as it will increase travel costs which may alter tourist decision-making and reduce inbound tourist arrivals (Scott et al., 2012a). On the other hand, tourism is a climate-sensitive sector that will be directly and indirectly impacted by climate change (Scott et al., 2012a). The next section introduces the conceptual framework developed by Scott, Hall, and Gössling (2012a), which provides a structure for understanding potential climate change impacts on the tourism system.

2.4.1 Impact of climate change on coastal tourism

There there are four broad pathways by which climate change will affect the future sustainability and competitiveness of tourism: (1) direct impacts of climate change, (2) indirect climate-induced environmental change, (3) indirect climate-induced socioeconomic change, and (4) policy responses (Figure 2.1, Scott et al., 2012a). Each pathway is outlined below.

Figure 2.1: Climate change impact pathways on tourism



Source: Scott et al. (2012a)

Pathway #1 – Direct climatic impacts: Anthropogenic climate change poses a threat to the attractiveness, sustainability, and competitiveness of tourism destinations (Scott et al., 2012a). In particular, climate extremes and variability, as well as shifts in mean temperature, precipitation, humidity, and wind, will result in infrastructure damage and business interruptions, and alter the length and quality of tourism seasons, operating costs, destination attractiveness and choice, and tourist demand (Scott et al., 2012a). Destinations in higher latitude and altitude will likely benefit from the warmer climate conditions (Hamilton, Maddison & Tol, 2005). However, destinations in tropical and sub-tropical destinations will likely face a number of environmental challenges, either introduced or exacerbated by climate change, including sea level rise, loss of beach and marine biodiversity, spread of infectious diseases, marine pollution, warmer temperatures and heat stress for tourists, and coral bleaching (IPCC, 2014a; Scott et al., 2012a).

Pathway #2 – Indirect climate-induced environmental impacts: Climate change affects the natural assets that define the destination image and are critical to its attractiveness and operationalization (Scott et al., 2012a). For example, climate change could potentially affect

essential elements of the 3S destination image (e.g., quality of beach and coral reefs), or may alter the availability of environmental services, such as freshwater (Gössling et al., 2012). Changed environmental conditions may also deter tourists, increase operating costs, and reduce the capacity of tourism entities to do business (Scott et al., 2012a).

Pathway #3 – Indirect climate-induced socio-economic impacts: Decreased economic growth and discretionary wealth, increased political instability and security risks, and changing attitudes toward travel will have an indirect impact on tourism (Scott et al., 2012a). The trickle-down effect of reduced discretionary income could restrict the financial capital of individuals and communities who rely on the tourism sector. Furthermore, security risks and political instability may also exacerbate the deteriorating economy of destinations that have been affected by climate change (Scott et al., 2012a).

Pathway #4 – Policy responses of other sectors: Policy responses of other sectors will have significant implications for international tourism, in terms of cost structures, insurance costs, and destination or modal choice (Scott et al., 2012a). Considering that the tourism sector emits up to 8% of all global GHG emissions (Lenzen et al., 2018), and that air travel accounts for 40% of that (UNWTO et al., 2008), most of the existing literature has been linked to the aviation sector (Gössling, Peeters & Scott, 2008; Pentelov & Scott, 2010; Scott et al., 2012a). Tourist mobility, particularly to long-haul destinations, will likely be negatively affected by emissions-reduction targets which aim to reduce GHG emissions through the introduction of taxes, levies, and trading schemes (Gössling et al., 2008).

2.5 Vulnerability of the coastal tourism sector to climate change

Coastal destinations are considered to be primary examples of vulnerability within a human-environment system (Moreno & Becken, 2009) given the vulnerability to multiple climate change risks and human stressors (IPCC, 2014a; Wong et al., 2014). The following sections discuss coastal tourism vulnerabilities in the context of sea level rise, storm surges, ocean temperature and acidity, and human activities. These climate change risks will have the greatest impact on beaches and coral reefs – natural assets that have become synonymous with coastal tourism product (Philips & Jones, 2006).

2.5.1 Coastal tourism vulnerability to sea level rise and storm surge

Natural coastal tourism assets, such as beaches and coral reefs, as well as tourist infrastructure along the coastline will be the most vulnerable to climate-induced shoreline change caused by sea level rise and storm surges (Philips & Jones, 2006; Scott et al., 2012a). In a study of 19 Caribbean countries, Scott et al. (2012c) determined that 49% to 60% of all tourism establishments will be vulnerable to coastal erosion under a 1m sea level rise scenario – 29% of which will also be vulnerable to partial or full inundation. Studies in Martinique, Barbados, and Bonaire have also demonstrated that beach degradation reduces the attractiveness and insurability of destinations (Uyarra et al., 2005). However, a coast at a high elevation and with low erodibility sediment and thick natural vegetation will experience less damage from storm surges than a coast with lower elevation, highly erodible sediment, and no natural vegetation (Hinton, 2000; Satyanarayana et al., 2017). Insurance costs associated with the physical, social, and environmental damage will also be mounting as well. Munich Re Group (2017), a global leader in reinsurance, found that the series of global hurricanes in 2017 equated to the highest insured loss of US\$135 billion, with an additional US\$330 billion in uninsured loss. Such events lead to reputational damage of a destination, the loss of tourism income, and physical damage to infrastructure and environment (Scott et al., 2012a).

2.5.2 Coastal tourism vulnerability to ocean temperature and acidification

Coral reefs are an important feature of coastal tourism, generating over US\$36 billion per year in tourism revenue (Spalding, Burke, Wood et al., 2017). However according to the IPCC, ocean temperature and acidification have already affected the coral reefs in the majority of the coastlines around the world (Wong et al., 2014). Destinations that rely on coral reefs for water-based recreation activities, such as diving and snorkeling, are most vulnerable to climate-induced coral bleaching (Marshall, Marshall, Abdulla et al., 2011; Spalding et al., 2017; Van Der Veeken, Calgaro, Munk et al., 2016; Wong et al., 2014). In the event of coral bleaching, studies have found that tourists would unlikely return to the destination (Uyaara et al., 2005) and instead find alternative sites for snorkeling and scuba diving (Marshall et al. 2011). Beyond its aesthetic value to tourism, coral reefs also act as a natural defence against storms and flooding and are essential elements of coastal protection (Reguero, Beck, Agostini et al., 2018). Reguero et al. (2018) assessed the coral reefs in Grenada and found that coastal areas with healthy coral reefs

were associated to stable shorelines whereas coastal areas experiencing reef degradation also experienced severe coastal erosion (Reguero et al., 2018).

2.5.3 Coastal tourism vulnerability to human influence

Coastal systems are also affected by human-related drivers of vulnerability (Philips & Jones, 2006; Wong et al., 2014), making it difficult for local stakeholders to facilitate sustainable tourism (Ratnayake et al., 2018a). For example, anchors from boating trips and poor diving practices damage coral reef ecosystems (Spalding et al., 2017) while waste-water pollution add damage to sensitive coral organisms through saltation and eutrophication (Calgaro & Cochrane, 2009). Additionally, human-made coastal structures (e.g., groynes, seawalls, and breakwaters) and sand mining could potentially alter the sediment transport along the coast and exacerbate the vulnerability of coastal systems (Weerakkody, 1997; Nianthi & Shaw, 2010; Philips & Jones, 2006; Ratnayake et al., 2018a).

The availability of freshwater is another issue that confronts both the tourism sector and local community. In some destinations around the world, tourist's water consumption per capita exceeds that of the local population – whether through activities (e.g. golf tourism, spas, swimming pools), personal and hygienic use (e.g. drinking water, showers, toilets), or indirectly through infrastructure development, food and beverage, landscaping, and fuel production (Gössling et al., 2012). For example, water scarcity is a common phenomenon for local residents in Bali, Indonesia due to the mismanagement and pollution of water resources (Cole, 2014). Tourism in Bali is estimated to consume up to 65% of the local water resource through spas and laundries, water parks, restaurants, and hotels (Cole, 2012). Similarly, residents in rural Lijiang, China have also started to face water shortages due to the over-exploitation of water resources for tourism infrastructure development and tourism demand (Su et al., 2016). As such, water conflict could potentially exacerbate existing tensions between the tourism sector and local community, especially in areas where the peak tourism season occurs during dry seasons with reduced rainfall (Gössling et al., 2012; Cole, 2012, 2014).

2.6 Challenges facing adaptation implementation

According to Scott et al. (2012a), there are six types of adaptation measures for the tourism sector:

1. Technical measures, such as shore protection structures, weather forecasting, and beach nourishment;
2. Managerial measures, such as water conservation plans, low-season closures, and product, market, or regional diversification;
3. Policy measures, such as planning regulations, enforcing setback requirements and building standards, and seeking funding to implement adaptations;
4. Research measures, such as assessing the physical risk analysis for tourism properties, implementing monitoring programmes for bleaching, or assessing stakeholder perception of climate change;
5. Education measures, such as education and awareness campaigns for water and energy conservation;
6. Behavioural measures, such as GHG emission offset programmes and water conservation initiatives.

Examining the outcomes of adaptation has led to focused research on the challenges facing its implementation (Hall et al. 2015b). Since tourism revenue and economic impacts come from a variety of industries (e.g., aviation, national parks, hotels, and various suppliers), the coordination and implementation of tourism-related policies are often fragmented between government ministries and departments who have diverging goals (Santos-Lacueva & González, 2018; Wood, 2017). What is seen as a successful outcome for one group of stakeholders may be judged as maladaptive and unsuccessful by stakeholders in other times and places (Barnett & O'Neill 2010). Consequently, the question of how to effectively, equitably, and efficiently implement climate adaptation remains (Tanner & Allouche, 2011), particularly among those working at the frontlines of adaptation (Ahmad, 2009; McLaughlin, 1987; Moser & Ekstrom, 2010; Wood, 2017; Worker, 2017).

Challenges at the policy-level stem from issues related to coordination and regulation, as evidenced by several case studies (Mycoo, 2006; OECD & UNEP, 2011; Santos-Lacueva & González, 2018; Wise et al., 2014; Wood, 2017; Worker, 2017). Environmental ministries are often the focal point of climate adaptation and low-carbon implementation but have lacked the lateral influence to deliver significant results (Worker, 2017). Incorrect risk perceptions, irrational business and government behaviour, and explicit or implicit government guarantees may also lead to improper land-use management, such as excessive-risk taking or over-

investment in coastal zones (Dastgheib, Jongejan, Wickramanayake, & Ranasinghe, 2018b). Consequently, the outcomes of such implementation have “undermined the effectiveness of managing tourism as a genuine economic tool” (Wood, 2017, p.80). Mycoo (2006) pointed out that coastal tourism in Barbados has grown unsustainably due to the market-driven ethos of development that has resulted in poor regulation of tourism activities and business practice, and relatively weak mitigation. In fact, nutrients and suspended soil found in untreated hotel waste has damaged nearly 30% of the coral reefs in the Caribbean (Mycoo, 2006). According to Rajasuriya (2004), large-scale resorts and marinas along coastlines in South Asia have depleted endemic species, archaeological artefacts, and coral reefs. In St. Martin’s Island, Bangladesh, the delivery of tourism as an economic development strategy was found to be weak (Wood, 2017). Despite developing a tourism zoning plan, the Department of Environment was unable to produce satisfactory outcomes due to their lack of ability to enforce regulation. As such, poorly managed tourism activities have left the community without access to fresh water, land, and natural resources (Wood, 2017).

Despite the global focus on the SDGs and the Paris Agreement, some studies have found that there is low coherence between tourism and climate change policy domains (OECD & UNEP 2011), including Spain (Santos-Lacueva & González 2018) and Australia (Moyle et al. 2018). In an analysis of climate change adaptation and mitigation policies in the tourism sector in 44 OECD countries, only 12 countries (27%) considered adaptation strategies for the tourism sector. The lack of progress with regards to the planning and implementation of adaptation policies in the remaining 32 countries (73%) is attributed to the “fundamental lack of ‘serious’ climate governance” (OECD & UNEP 2011, p.16). Moyle et al. (2018) empirically demonstrated that Australia’s tourism sector lacks the action and leadership needed to mitigate and adapt to climate change effectively. Posing the question, ‘Have Australia’s tourism strategies incorporated climate change’, the authors determined that less than half (21%) of 446 policy and planning instruments mentioned the term ‘climate change’. In this sample, most of the policies focused on issue identification and lacked strategies to address the short- and long-term implications of climate change (Moyle et al., 2018).

Studies at the destination level have focused on how tourism stakeholders perceive climate risks and respond to it. Despite evidence of climate change, the risk perceptions of tourism stakeholders, including policymakers, industry leaders, and businesses, were found to be

low (Hall, 2006; Matasci, Kruse, Barawid & Thalmann, 2014; Moyle, Moyle, Chai et al., 2018; Scott et al., 2012a, 2012b; Shakeela & Becken, 2015). Although Finnish nature-based tourism entrepreneurs were aware of the global climate change issue, they did not believe that it would influence tourism in the future (Saarinen & Tervo, 2006). The authors speculated that their risk perception of climate change was a contributing factor for the low number of adaptation strategies among their respondents' businesses (Saarinen & Tervo, 2006). In a longitudinal qualitative study of rural tourism entrepreneurs in New Zealand, participants were also aware of climate change as a challenge facing tourism in the future but did not consider it to be a significant threat compared to other business concerns (Hall, 2006). Such matters included the cost of operating a business, government regulation, business competition, unregulated development, and pollution (Hall, 2006). As Hall (2006) stresses, "how risk is perceived and interpreted will ultimately affect what actions are taken at different scales of governance, from the individual firm through to the state" (p.236). Similarly, Santos-Lacueva, Clavé, and Saladié (2017) note that "perceptions of risk are critical when it comes to including the issue on the [policy] agenda or deciding how to respond" (p.13).

2.6.1 Addressing the challenges

Considering that climate change adaptation is a cross-sectoral and "whole-of-government activity" (Ahmad, 2009, p.1), Giddens (2009) argues that climate action requires "the state to act as a facilitator [and] an enabler...to help to stimulate and support the diversity of groups in society that will drive policy onwards" (p.8). Some countries have implemented taxes and fees to protect the environment, such as coral reefs (e.g., cruise traveler visitor's tax of US\$7 in Belize), mountains (e.g., entry permit to Annapurna Conservation Area of approximately US\$27 for non-South Asian nationals in Nepal), and protected natural areas (e.g., entry tax of US\$100 to the Galapagos Islands that go towards financing biodiversity conservation, local community development, tourism services) (Organization for Economic Co-operation and Development [OECD] & UNEP 2011).

In other cases, governments have either embedded national climate change institutions within existing ministries and institutions or have diffused decision-making powers to other levels of government (Worker, 2017). For example, the Climate Change Technical Committee in Zambia is housed within the Ministry of Finance, the country's "locus of power and influence", China's government has given significant autonomy to provincial governments to experiment

with climate and environmental policies, and the Environmental Protection Authority of Ethiopia has been established directly under the Prime Minister (Worker, 2017).

Scholars and practitioners also recognize policy integration as a necessary response to climate change (Ahmad, 2009; Athulathumudali et al., 2011; Mickwitz et al., 2009; Santos-Lacueva & González, 2018; Senaratne et al., 2009; Tanner & Allouche, 2011). The notion of policy integration, sometimes referred to as ‘mainstreaming’ (Ahmad, 2009; Senaratne et al., 2009), is supported by the concepts of cooperation and coherence (Santos-Lacueva & González, 2018). Cooperation involves an exchange of information and dialogue between institutions and policy fields to create more efficient sectoral policies and strategies (Huxham, 1996). Policy coherence implies a promotion of mutually reinforcing policy actions across different government ministries and agencies in efforts to achieve a defined target (OECD, 2004). Drawing from definitions provided by Undererdal (1980) and Lafferty and Hovden (2003), Mickwitz et al. (2009) define climate policy integration as incorporating the “aims of climate change mitigation and adaptation into all stages of policy-making in other policy sectors” (p.19). Given that there is a global commitment to limit global warming to well below 2°C above pre-industrial levels (UN, 2015), national commitments must be reflected in policy instruments, government programmes, and sector-specific strategies (Mickwitz et al., 2009). However, as Santos-Lacueva & González (2018) stress, policy coherence does not guarantee implementation in practice. The success of adaptation policies and programmes largely depends on local capacity and will (McLaughlin, 1987), specifically how stakeholders conceptualize the issue and engage and support the policy (Moser & Ekstrom, 2010; Vignolia et al., 2012; Worker, 2017).

CHAPTER 3

CASE STUDY CONTEXT

3.1 Introduction

This chapter introduces the case study context of Sri Lanka. The first section describes the social, economic, and geographical context of Sri Lanka and includes a brief section about the civil war and the tsunami. The second section provides an overview of the country's tourism development and the tourism system. The third section outlines the potential climate risks facing the coastal tourism segment, including (1) increased ambient temperature, (2) changes in the frequency and intensity of floods, landslides, and drought (4) changes in the coastal system caused by sea level rise, ocean temperature, and ocean acidification, and (5) future international mitigation policy.

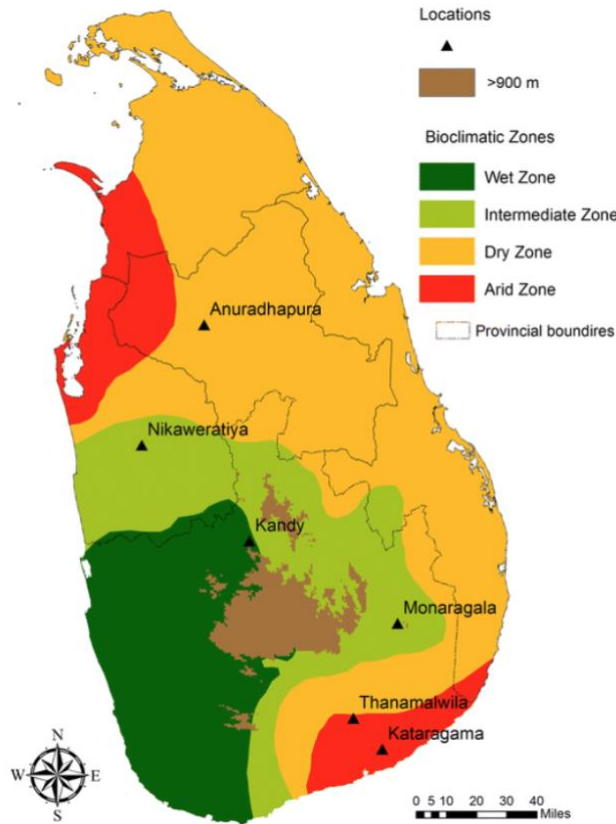
3.2 Overview of Sri Lanka

Sri Lanka is a lower middle-income (World Bank, 2018b) tropical island nation at the southern tip of India, and with a 1585km coastline (MMDE, 2011b). The estimated population of Sri Lanka is 21.4 million people, comprising of the Sinhalese (approximately 75% of total population), Tamil (15%), and Moor (9%) ethnic groups (Department of Census and Statistics, 2017). Approximately one-third of the population resides in the coastal region (MMDE, 2016b), an area that the Ministry of Environment (2011) considers to be the 74 Divisional Secretariat Divisions (DSDs) that have a coastal boundary (Ministry of Public Administration and Disaster Management, 2014). Most of the country's economic network is also concentrated close to the coast, including 60% of industrial units and 80% of tourist infrastructure (MMDE 2011b), of which account for 44% of the national GDP (Disaster Management Centre [DMC], 2012).

The climate of Sri Lanka is divided into three zones: the dry zone, intermediate zone, and wet zone (Figure 3.1, MMDE, 2011b). Temperature and precipitation are the key factors that define climate across the country although regional climate systems, specifically El Niño, La Niña, and the Intertropical Convergence Zone, cause fluctuations (Imbulana, Wijesekara & Neupane, 2006; Zubair et al., 2008). Average annual temperatures range from 15.8°C in Nuwara Eliya in the central highland to 29°C in the north-east coast of Trincomalee (Ahmed & Suphachalasai, 2014). Rainfall is determined by two monsoon seasons, the south-west monsoon

([SWM], also referred to as *Yala*) and the north-east monsoon ([NEM], also referred to as *Maha*) (Table 3.1, MMDE 2010).

Figure 3.1: Dry, intermediate, and wet climatic zones in Sri Lanka



Source: Harischandra, Dassanayake & De Silva (2016)

Table 3.1: Seasonal distribution of rainfall in Sri Lanka

Season	Period	Regions affected	Observed conditions
North-east monsoon season (NEM)	Dec – Feb	North & north-east	High north-easterly winds
First inter-monsoon season (FIM)	Mar - Apr	South-west	Thunderstorms, hazardous lightning, intense rainfall, mild tornados
South-west monsoon season (SWM)	May -Sept	South-west	High westerly/south-westerly winds, intense rainfall leading to floods in low-lying areas and land-slides in hilly areas
Second inter-monsoon season (SIM)	Oct – Nov	North & north-east	Thunderstorms, hazardous lightning, intense rainfall, mild tornados

Sources: Imbulana et al. (2006), CCS & MMDE (2016), Wickramagamage (2016)

The wet zone, located in the western and south-western regions, receives the highest mean annual rainfall (2500-5000mm) (MMDE, 2011b). Most of the annual rainfall occurs during SWM between May to September (MMDE, 2011b) and causes severe flooding in low-lying areas and landslides in adjacent hills in the wet zone (Alahacoon, Matheswaran, Pani, 2018). The dry zone, located in the northern, north-eastern, and north-western regions, experiences the least amount of mean annual rainfall (<1750mm) and typically experiences a dry period between May to September (MMDE, 2011b).

Between 1983 to 2009, Sri Lanka was affected by a civil war between government forces and the Tamil militant group, the Liberation Tigers of Tamil Eelam (LTTE). The longstanding ethnic divide between the Sinhalese and Tamil, reminiscent of the pre-colonial and British colonial eras, was the source of the country's 26-year civil war (Pieris, 2015). The northern and eastern regions, accounting for 30% of the country's land mass and 57% of the coastline (MMDE, 2011c), were most affected by the war, although there were also occasional attacks on political and economic hubs in Colombo and Galle (Buultjens, Ratnayake, & Chammika, 2014). The consequences of the war were the thousands of fatalities, the displacement of people, and a failing economy (Buultjens et al., 2014) as the government spent approximately US\$200 billion on the armed conflict (Uyangoda, 2010). According to Fernando et al. (2013), the tourism sector was "one of the most affected by the war and violence" (p.686), causing Sri Lanka to lag behind its Asian competitors including Singapore and Thailand (Abeyasinghe & Abeyratne, 2017). Due to political instability, heavy military presence, and terrorist attacks, tourist arrivals remained relatively static at 300,000 to 500,000 per annum over this timeframe (SLTDA, 2017b). Between 1983-1995 alone, Sri Lanka's tourism sector was estimated to have lost US\$1.9 billion worth of potential foreign exchange (Gamage, Shaw, & Ihalanayake, 1997). Despite this, government-protected areas in the central, west, and south-western region were still available for tourism during the war (Lokuhetty, Jayawardena & Mudadaeniya, 2013). Section 3.3 discusses the growth of tourism since the end of the conflict in 2009.

On December 26, 2004, Sri Lanka was struck by a tsunami. The north and east coasts were most affected (Godavitarne et al., 2006), although several districts along the south and west coasts were also severely hit (Weerakoon, Jayasuriya, Arunatilake & Steele, 2007). Without an early warning system, waves reached as far as 500m inland, killing over 35,000 people, of which 100 were tourists (Buultjens et al., 2014), displacing 600,000 people, and destroying nearly

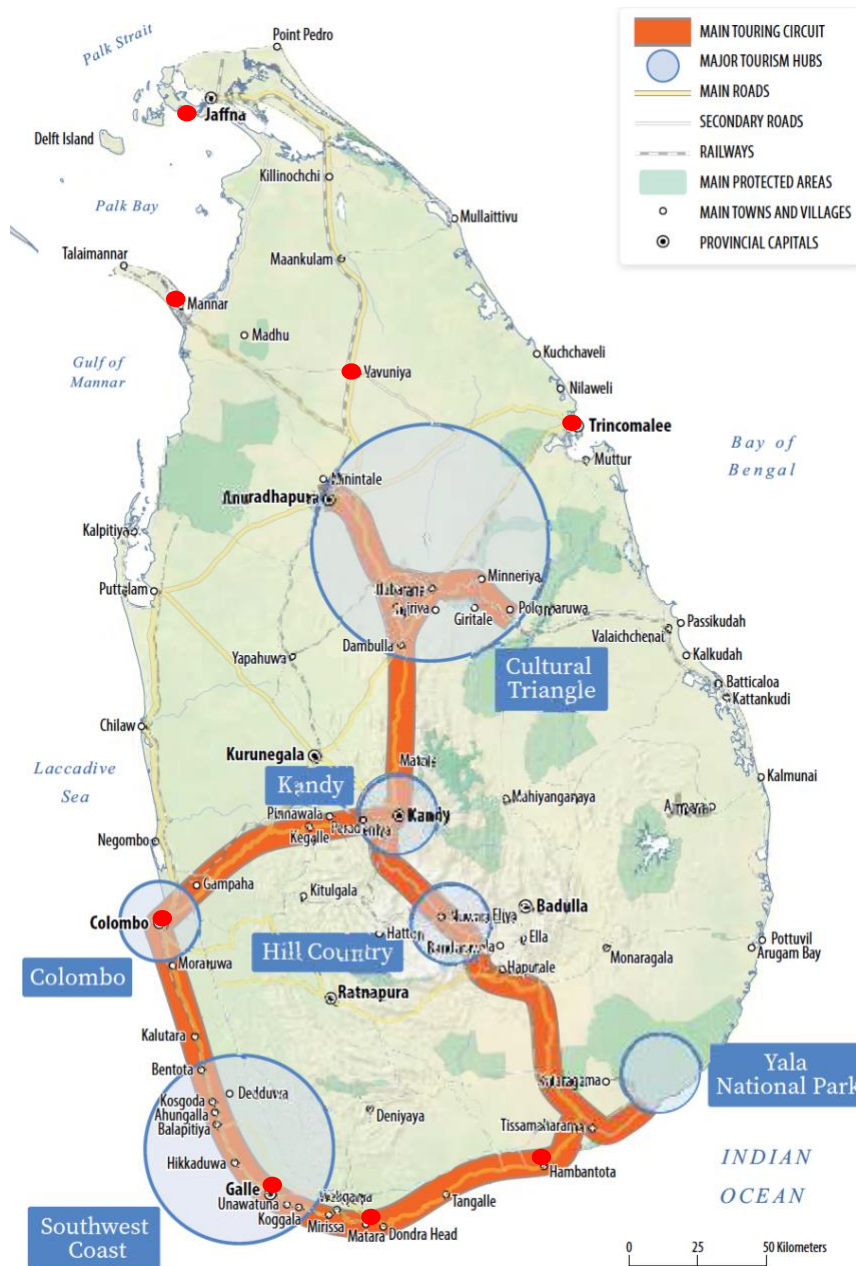
100,000 buildings (Asian Development Bank [ADB], 2005; Satarasinghe, 2017; World Bank, 2014). The formal tourism sector lost an estimated US\$380 million in assets and output losses (Buultjens et al., 2014). However, this figure is expected to be substantially higher since it excludes informal tourism establishments that were not registered with the tourism board at the time (Buultjens et al., 2014). For the first time in modern history, the tsunami exposed the vulnerability of coastal systems and related economic activity (Calgaro & Cochrane, 2009), as well as the government's lack of preparedness to address a natural disaster (Buultjens, Ratnayake, & Chammika, 2016). In January 2005, the Task Force for Rebuilding the Nation (TAFREN) announced a coastal buffer zone policy of 100m on the south and west coasts and 200m on the north and east coasts (Robinson & Jarvie, 2008). Undamaged buildings, as well as structures that were not more than 40% damaged, were permitted to remain within the buffer zone (Robinson & Jarvie, 2008). Infrastructure development for business, especially tourism businesses, could also apply for exemptions to the buffer zone policy; however, some viewed this as a method for the government to gain control of coastal land for tourism development (Connolly, 2007; Hyndman, 2007; Lehman, 2014). Consequently, houses and small businesses that were destroyed could not be legally reconstructed (Robinson & Jarvie, 2008), forcing over 900,000 people to resettle (Lehman, 2014). By February 2006, the Reconstruction and Development Agency ([RADA] that replaced TAFREN) announced that the buffer zone would be relaxed (Connolly, 2007; Hyndman, 2007) to the range between 55m to 25m in the southern districts and 100m to 50m in the north-east districts (Leybold-Johnson, 2005).

3.3 The Sri Lankan tourism sector

The government of Sri Lanka declared victory over the LTTE on May 18, 2009. Between 2010 to 2017, the economy grew an average of 5.8% per annum (World Bank, 2018b), with much of the momentum being driven by the tourism sector (SLTDA, 2017a). By 2018, tourist arrivals exceeded 2.3 million, up from 447,890 in 2009 (SLTDA, 2018), and contributed 11.6% to the national GDP as the third largest foreign exchange earner in the country (WTTC, 2018). At the time of writing, the Ministry of Tourism is developing the tourism in previously war-affected areas, including Jaffna, Mannar, Vavuniya, and Trincomalee (see Figure 3.2, MoT, 2017). Renovations to the motorway and railway systems have also improved tourist mobility to these destinations for the first time since the 1990s (MoT, 2017). As such, the WTTC (2017) named Sri Lanka as one of the top ten countries showing the strongest growth due to improved

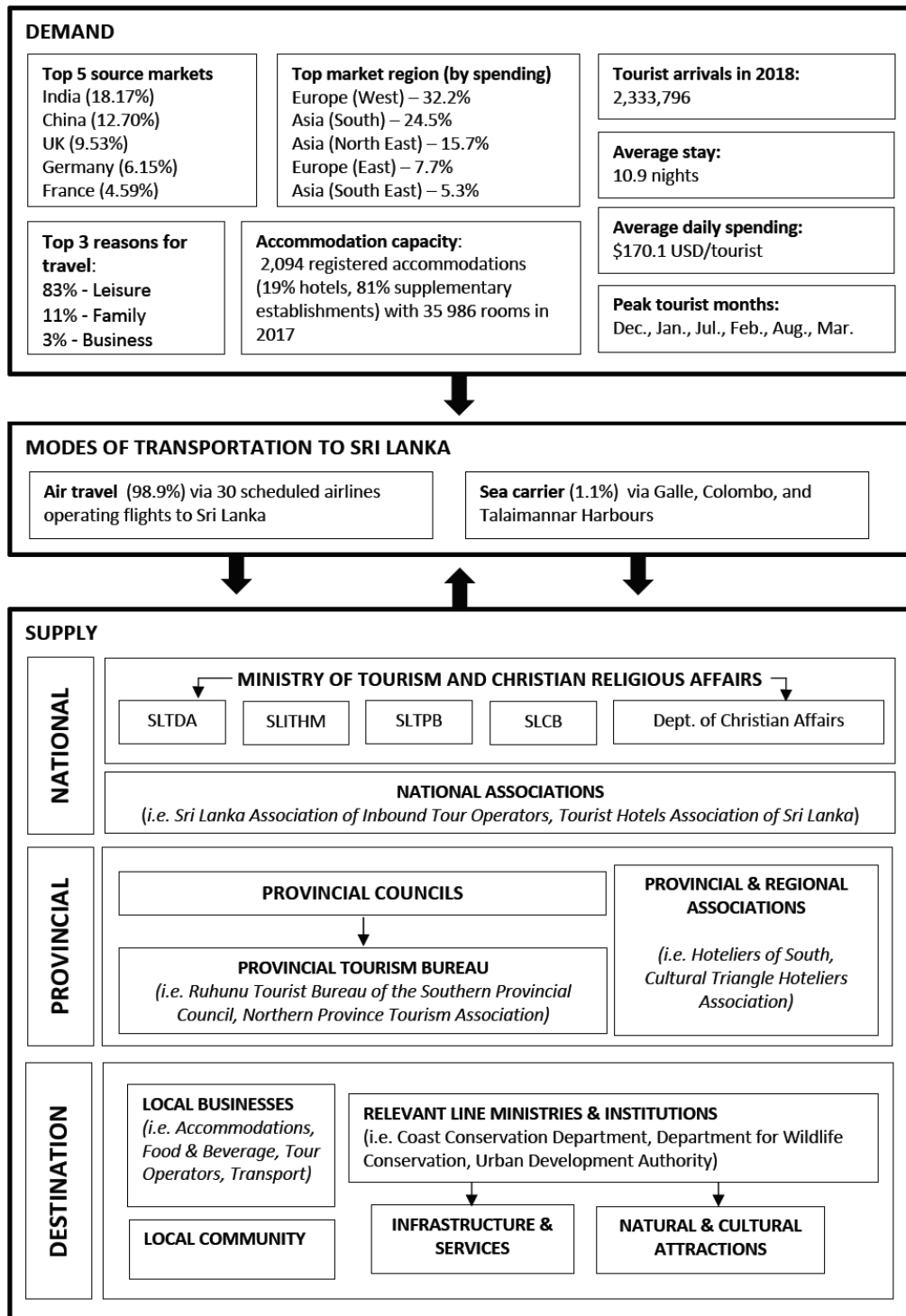
governance, prioritization of tourism, and investment incentives. The Lonely Planet (2018) also recently named Sri Lanka as the best country in the world to visit in 2019, stating that it has been ‘revived’ after decades of civil conflict. Figure 3.3 presents an overview of the tourism system in Sri Lanka.

Figure 3.2: Popular tourist routes in Sri Lanka



Source: MoT (2017)

Figure 3.3: Overview of tourism system in Sri Lanka



Adapted from Klint et al. (2012), information collected from SLTDA (2018, 2017a, 2017c)

Tourism is suitable year-round, although peak season correlates with the NEM when there is typically less rain throughout the country (MMDE, 2011b). The primary reason for travel

is for leisure, family, or business, with demand driven by top source markets from India, China, United Kingdom, Germany, and France. The top market regions based on tourist spending are Europe and Asia. On average, tourists stay for 10.9 nights and spend US\$170.1/day (SLTDA, 2017a). In 2017, there were 2,094 registered accommodations with a room capacity of 35,986 (SLTDA, 2017a). Between 2011 to 2017, the average occupancy rate was 74% (SLTDA, 2017a). By the end of 2017, the tourism sector directly and indirectly supported 360,000 jobs in Sri Lanka – a nearly three-fold increase from the tourism’s employment contribution in 2009 (SLTDA, 2017a).

As Figure 3.2 shows, the supply of tourism is coordinated at the national, provincial, and local levels. The monitoring and implementation of all tourism-related policies, programmes, and projects fall under the responsibility of the Ministry of Tourism and Christian Religious Affairs (referred to here as the Ministry of Tourism). Tourism-related institutions that are under the Ministry of Tourism include:

- Sri Lanka Tourism Development Authority (SLTDA), responsible for the planning, development, regulation, and policy implementation of tourism;
- Sri Lanka Institute of Tourism and Hotel Management (SLITHM), responsible for all aspects related to training and developing industry professionals;
- Sri Lanka Tourism Promotions Bureau (SLTP), responsible for activities related to developing, promoting, and marketing Sri Lanka as a travel destination;
- Sri Lanka Convention Bureau (SLCB), responsible for promoting Sri Lanka as a venue for meetings, incentives, conferences, and exhibitions (MICE) tourism.

At the intermediate level of government, Sri Lanka has 25 administrative districts that are organized into nine provinces; each district is further subdivided into 331 DSDs (Ministry of Public Administration and Disaster Management, 2014). Each province has a Provincial Council that is responsible provincial planning, urban development, environmental management, and economic services – including provincial tourism. The tourism authority within the Provincial Council facilitates national objectives set out by the Ministry of Tourism and coordinates development actions with DSDs (MoT, 2017). For example, the Ruhunu Tourism Bureau of the Southern Provincial Council oversees the regional development and promotion of tourism in the southern region across the Galle, Matara, and Hambantota districts (see Figure 3.2). Regional

associations also connect stakeholders laterally at the provincial level, such as Hoteliers of South or the Cultural Triangle Hoteliers Association.

Local businesses and communities have the main point of contact with tourists through formal and informal tourism-related services, including accommodations, food and beverage, and transportation. Depending on the infrastructure, services, and attractions in each region, there may be overlapping jurisdictions with other line ministries and institutions (Landström, 2006; MoT, 2016). For example, while beaches are significant to tourism, coastal areas also fall in the mandate of the Coast Conservation Department (CCD), Urban Development Authority (which functions under the Ministry of Defence), Ministry of Environment, and the Marine Protection Agency (MMDE, 2011a).

3.4 Climate change and coastal tourism in Sri Lanka

Coastal tourism is the largest market segment in Sri Lanka (Fernando et al., 2013; Lokuhetty et al., 2013), particularly among visitors arriving from the top source markets (SLTDA, 2017c), yet is recognized as one of the most vulnerable sectors to climate change in Sri Lanka by the CCS and Ministry of Environment (CCS & MMDE, 2016; MMDE, 2016b). To this end, Gardner (2013) states that:

In the next 55 years, the greatest threat to Sri Lanka will not be from war, but from climate change. Sri Lanka is particularly vulnerable to rising sea levels and weather-related disasters that have the potential to set back any gains made in agriculture, fisheries and even services such as tourism (para. 2).

As discussed in Chapter 2, the impacts of climate change will have a tremendous effect on the natural capital that coastal tourism relies on, especially beaches and coral reefs (UNWTO et al., 2008). The issue of climate change is further exacerbated by high levels of uncertainty on the scale and magnitude of impacts (Hijioka et al., 2014). In fact, several climate change vulnerability assessments in Sri Lanka have significant knowledge gaps and data limitations related to climate science and baseline information (Bakker, 2018; DMC, 2012; MMDE, 2011a). For example, in a coastline recession study, Dastgheib et al. (2018b) noted that Sri Lanka is a “highly data-poor environment” (p.1), where most data is extracted from global databases. In another study, De Costa and Dassanayake (2016) aimed to raise awareness about sea level rise and possible impacts in Sri Lanka – despite data being “sparse or not available” (p. 248). At the time of writing, there is only one known study that focuses on the relationship between climate

change and tourism in Sri Lanka (Buultjens et al., 2018). The following section provides an overview of the state of knowledge on five climate change impacts that are most relevant to Sri Lanka tourism: (1) increased ambient temperature, (2) changes in the frequency and intensity of floods, landslides, and drought (3) changes in coastal system caused by sea level rise, ocean temperature, acidification, and (5) future international mitigation policy.

3.4.1 Increased ambient air temperature

Overall ambient air temperature has increased in Sri Lanka, with more warm days and warm nights and less cold days and cold nights (MMDE, 2011a). The decadal increase in maximum temperature was estimated to be 0.46°C between 1961-2000 (MMDE, 2011b). It is expected that climate change will continue to cause warming, with temperature projections in South Asia rising by more than 2°C by 2050 and exceeding 3°C towards the end of the century (IPCC, 2014b). However, projections show that warming will likely be approximately 15% higher (+0.5°C) than previous IPCC estimates under a worst-case emissions scenario (Brown & Caldeira, 2017). The World Bank predicts that temperature increases across the South Asia sub-region would reduce GDP per capita by 2.8% in India, 2.9% in Pakistan, 6.7% Bangladesh, and 7% in Sri Lanka (Mani, Bandyopadhyay, Chonabayashi et al., 2018). By 2050, 19 million people would live in ‘severe hotspots’ in Sri Lanka (Mani et al., 2018). Drawing from data from the World Bank (2018a) Climate Change Knowledge Portal, average monthly temperatures are expected to increase by 3.13°C (to 29.8°C) in 2050 and by 4.79°C (to 31.5°C) in 2100, compared to the period between 1961-1990, under a worst-case scenario (see Appendix I).

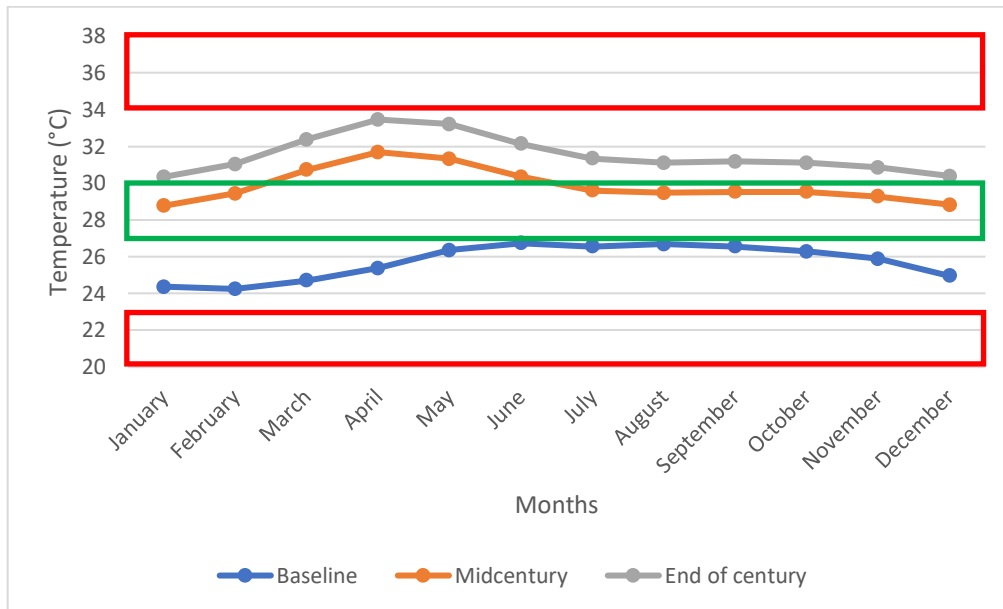
3.4.1.1 Impact of increased ambient temperature on tourism

Increased ambient temperature could potentially lead to higher operating and cooling costs in tourist accommodations (MMDE, 2011; UNWTO et al., 2008). Accommodations account for 21% of tourism’s total GHG emissions worldwide, of which most of the emissions are from air-conditioning and heating systems (UNWTO et al., 2008). In Sri Lanka, approximately 47% of total energy used in graded hotel establishments go towards mechanical ventilation and air conditioning (Amarawardhana, Senanayake & Abeyweera, 2015). As ambient temperature increases in Sri Lanka (IPCC, 2014a; Mani et al., 2018; World Bank, 2018a) and as tourism expands, with more tourist arrivals and graded hotel establishments in Sri Lanka

(SLTDA, 2017a), so too will energy demand from tourist accommodations and businesses (UNWTO et al., 2008).

In terms of the impact on tourists and tourism demand, Rutty and Scott conducted a series of studies (2010, 2013, 2015) to determine if future temperature increase would affect beach users in coastal destinations. The findings from Rutty and Scott (2013) indicate that ideal temperatures for beach holidays are between 27°C to 30°C, with temperatures below 23°C and greater than 34°C being unacceptable for beach tourism. In order to determine if future temperature increase would affect the thermal comfort of beach users in Sri Lanka, maximum monthly average temperature data for mid-century and end-of-century (World Bank, 2018a) were compared against the climate preferences determined by Rutty and Scott (2010). Figure 3.3 shows the analysis, with the ideal temperature range is outlined in green whereas the unacceptable temperature ranges are outlined in red. Temperature increase under a worst-case scenario by the end of the century (increasing by 4.79°C to 31.5°C) in Sri Lanka would still be considered acceptable by current tourist climate preferences (24°C to 33°C) for a beach holiday. Therefore, an increase in future ambient air temperature would unlikely affect overall tourist comfort in Sri Lanka’s coastal destinations.

Figure 3.4: Sri Lanka Average Monthly Temperatures (Baseline vs. RCP8.5 Mid-Century vs. RCP8.5 End-of-Century)



3.4.2 Changes in frequency, intensity, and duration of floods, landslides, and droughts

The frequency, intensity, and duration of floods, landslides, and droughts are expected to increase due to changes in rainfall intensity and variability. According to Eriyagama, Smakhtin, Chandrapala, and Fernando (2010), “future climate scenarios for Sri Lanka are scarce and even the ones that exist appear to project contradictory results, especially with respect to future rainfall” (p.103). However, according to IPCC, South Asia will see increases in the frequency and intensity of rainfall during the SWM (Hijioka et al., 2014). While severe floods and droughts are not uncommon, occurring every ten and four years respectively (De Silva & Kawasaki, 2018), these events are becoming more frequent due to climate-induced changes to rainfall patterns in the wet zone and extended periods of consecutive days without rain in the dry zone (DMC, 2012; MMDE, 2011b; IPCC, 2014a). Cyclones rarely affect Sri Lanka, only occurring five times in the last 50 years (DMC, 2012), however, cyclones that form over the Bay of Bengal indirectly affect the north and east coasts (MMDE, 2011c).

3.4.2.1 Impact of flooding, landslide, and drought on tourism

Changes in rainfall patterns and intensity are associated to more frequent cases and outbreaks of dengue fever in Sri Lanka (Ebi & Nealon, 2016). Outbreaks of dengue fever have typically occurred after periods of heavy rainfall and flooding during the SWM, and in densely populated urban and suburban areas (World Health Organization [WHO], 2017). While changes in temperature and rainfall create favourable conditions for mosquito breeding, other factors, including urbanization, surface and groundwater contamination, and poorly managed urban drainage, also add to the risk of dengue epidemics (Ahmed & Suphachalasai, 2014; Chandrasekara, Uranchimeg, Kown & Lee, 2018; Ebi & Nealon, 2016). According to the Ministry of Health, Nutrition and Indigenous Medicine (2018), the number of reported dengue outbreaks in Sri Lanka grew exponentially from 34,188 infections in 2010 to 186,100 infections in 2017. Although the number of tourists affected is unclear, some countries issued travel warnings for dengue (“Sri Lanka, citing violence and dengue, cuts 2018 tourist arrivals target”, 2018) and if such conditions became chronic, this could deter some international tourism.

High-intensity rainfall will overwhelm rivers and storm-water drainage systems, causing flooding to cities in the wet zone (MMDE, 2011b; DMC, 2012), especially in Colombo and Galle (Chandrasekara et al., 2018). Mountainous areas and hill slopes, especially in the Nuwara Eliya district (MMDE, 2011a), are the most vulnerable to flash floods and landslides. High

flood-risk areas may also face water scarcity due to contaminated drinking wells, as was the case during the 2017 flooding event ('Sri Lanka struggles with paucity of clean water in flood-hit regions, toll rises to 183', 2017). Destinations that have faced a variety of disasters and natural hazards (MMDE, 2011a) and consistent negative media attention may be avoided by tourists since media plays a role in shaping destination image and tourist decision-making (Shakeela & Becken, 2015). This was the case for Sri Lanka when the May 2017 flooding reached international headlines ('Is it safe to travel to Sri Lanka? WARNING issued for Britons in busy tourist areas' 2017). Flooding affected 23 districts, with most of the damage occurring in the south-west region (Chandrasekara et al., 2018) while the flood event in May 2016 resulted in 200 deaths, affected 340,150 people in 16 of the 25 districts, and caused US\$2 billion of economic damage (Alahacoon et al., 2018; Chandrasekara et al., 2018). In response, the Minister of Tourism released a statement saying that "tourism was not affected by the natural disaster and there were no direct impact or losses to tourism industry" (Jayasuriya, 2017, para. 2).

More frequent and intense rainfall could reduce tourist mobility between coastal cities. Although the coastal belt contains nearly 20% of the country's motorway and one-third of its railroads, the Ministry of Environment (2011a) contends that the transportation network was not designed to accommodate the impacts of climate change. In the Galle district, Satyanarayana et al. (2017) estimated that 72% of the coastal area within 300m of the coastline will be vulnerable to water-related impacts, such as storm surge, with vulnerability increasing to 88% within 100m of the coastline. Consequently, some transportation infrastructure along the south-west coast have already been affected by flooding and storm surges (MMDE, 2011b).

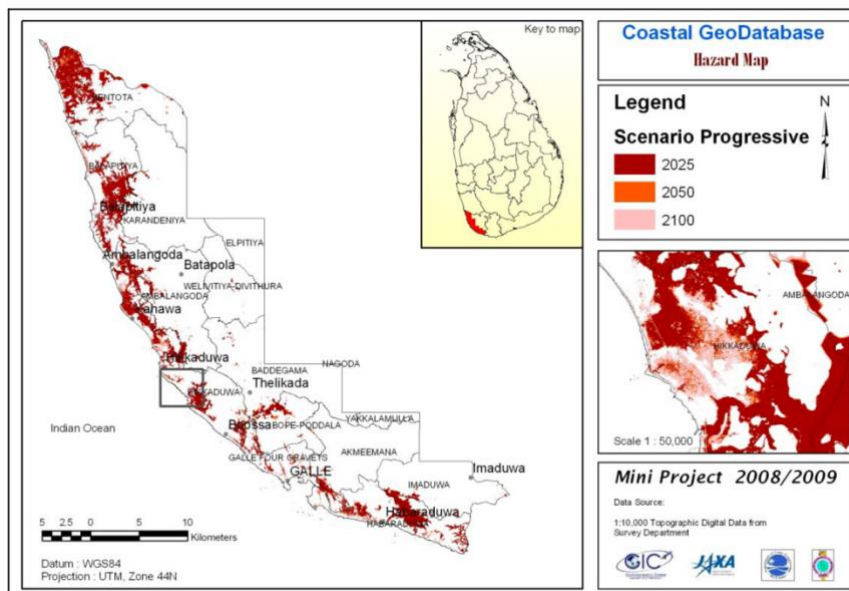
Despite receiving rainfall throughout the year, changes in the spatial and temporal distribution of rainfall means that the dry zone (MMDE 2011b – a landmass that constitutes approximately 65% of the country (National Council for Sustainable Development, 2009) – will experience more water shortages and droughts (DMC, 2012). Districts in the north-central and south-eastern regions will likely experience more dry periods and longer droughts (MMDE, 2011a), especially between May to September (MMDE, 2011c), under future climate change scenarios. Changes in rainfall patterns will likely affect the quantity and quality of water supply, especially in areas that already face water pressures due to a high population density or lack of access (DMC, 2012; MMDE, 2011a). In the absence of water management and regulation, water

shortages may become more frequent (Cole, 2012, 2014) as the tourism development expands into the dry zone (MoT, 2016).

3.4.3 Changes in coastal system caused by sea level rise, ocean temperature, and acidification

Global mean sea level is expected to rise between 79 to 146cm under a high emissions scenario, affecting nearly 153 million people across the globe without adaptation (Kopp et al., 2017). Long-term observational records of sea level rise and regional changes are scarce in Sri Lanka (Senaratne et al., 2009; DMC, 2012; De Costa & Dassanayake, 2016; Bakker, 2018), as is the case for many developing countries (Scott et al., 2015). However, based on downscaled IPCC (2007) projections, one study estimated that sea level rise for 2025, 2050, and 2100 in the south-western coastal region “were of 1.14m, 1.31m, and 1.73m above mean sea level [1961-1999] for the three scenarios, respectively” (see Figure 3.4, Gunasekara, Wickramarachchi, Sivanantharajah et al., 2009 p.1). Coastal land, human settlements, and infrastructure, including houses, roads, and tourism establishments, will be most affected by sea level rise and the associated impacts of erosion, saltwater intrusion, and increased frequency of storm surges (MMDE, 2011a), with the greatest impact along the west, south-west, and south coast (World Bank, 2012).

Figure 3.5: Potential hazard scenarios caused by sea level rise in the Galle district



Source: Gunasekara et al., (2009)

As noted in Chapter 2, coastal systems are sensitive to ocean temperature and acidification (Wong et al., 2014). It is virtually certain that the upper layer of the ocean has experienced the strongest warming between 1971-2010 (Rhein et al., 2013), with the Indian Ocean experiencing the greatest warming than any other period due to global warming (IPCC, 2001). Increased ocean temperature and acidification pose a growing and serious risk to coral reefs in Asia (Hijioka et al., 2014; Hoegh-Guldberg et al., 2017). Under a moderate emission scenario (RCP4.5), most warm-water coral reefs in shallow waters will be eliminated by 2050 (Hoegh-Guldberg et al., 2017). Annual severe bleaching conditions near Sri Lanka will likely begin in 2050 under a business-as-usual scenario (UNEP, 2017). However, compared to other countries in the South Asian Seas (of which include Bangladesh, Chagos Archipelago, India, Maldives, and Sri Lanka), Sri Lanka will be the last country to experience annual severe bleaching while the Chagos Archipelago will be the first to be affected by 2041 (UNEP, 2017). It should also be noted that El Niño and La Niña affect the distribution of ocean temperature, seasonal rainfall variation, wind patterns, and currents in the Indian Ocean (Vialard et al., 2011), especially during the NEM (Burt & Weerasinghe, 2014). This was observed in Sri Lanka when coral reefs in Mannar, Unawatuna, and Weligama were damaged by the global mass coral bleaching events that occurred during strong El Niño episodes in 1997/98, 2010, and 2015/16 (Westmacott, Cesar, Pet-Soede & Linden, 2000; Claar et al., 2018). For example, the 1998 ocean temperature increase of 3°C caused coral bleaching of up to 95% (Westmacott et al., 2000). By 2000, shallow water coral cover was reduced to 28% in Weligama, 20% in Unawatuna, and 7% in Hikkaduwa (Rajasuriya et al., 2004).

3.4.3.1 Impact of climate-induced coastal system changes on tourism

Tourism businesses and infrastructure near sensitive coastlines, as well as natural, cultural and archeological assets along the coastal belt (MMDE, 2016b), are exposed to inundation and coastal erosion caused by climate-induced sea level rise and intense storm surges (Buultjens et al., 2018; MoT, 2016). Additionally, coastal processes, upstream anthropogenic activities, and poorly planned coastal infrastructure (DMC, 2012; Frykman & Seiron, 2009) also exacerbate coastal erosion. Under a business-as-usual scenario, existing beaches in Sri Lanka that are currently stable or slightly accretional will likely disappear by 2100 (Bakker, 2018). This is concerning considering that tourists are unlikely to return to a destination with reduced beach area (Uyarra et al., 2005). Dastgheib, Jongejan, Mehvar, and Ranasinghe (2018a) also argued

that the risk of coastline erosion is an economic issue since coastal damage and loss of coastal land-use opportunities are costly. Although the economic impact of sea level rise has not been systematically assessed, Dastgheib et al. (2018b) estimated that environmental loss (1% exceedance probability coastline recession between 37m and 262m) associated to sea level rise along a 200km stretch in the East Coast could reduce the local tourism value of coastal ecosystems by US\$9.3-11.7 million by 2110 in Trincomalee (Dastgheib et al., 2018a). The study also estimated that the area could experience an additional loss in amenity value of coastal ecosystems by US\$12-18 million (Dastgheib et al. 2018a).

As previously mentioned, coral reefs are vulnerable to increases in ocean temperature and acidification (Wong et al., 2014) as well as stressors caused by human activity in warm-water reefs (e.g., pollution, over-harvesting, physical destruction) and cold-water reefs (e.g. bottom trawling, hydrocarbon exploration and production, waste disposal, and coral exploitation) (Hoegh-Guldberg et al., 2017). As such, the additional benefits of coral reefs, including fish habitat, cultural and aesthetic value, and protection against wave action and erosion, will also be compromised by regional stressors and anthropogenic climate change (Claar et al., 2018). Given that coral reefs are an important tourist attraction in Sri Lanka (Baba, 2010; Landström, 2006; Perera & De Vos, 2007), return visitations of dive tourists and other related market segments could substantially decrease due to future coral bleaching and damage (Uyarra et al., 2005). Nevertheless, since Sri Lanka will likely experience annual severe bleaching conditions last among other South Asian countries, dive tourists traveling to the region may prefer to visit Sri Lanka over other destinations with bleached sites (Uyarra et al., 2005). The government of Sri Lanka has already established Special Management Areas in Marine Protected Zones, such as Hikkaduwa, in order to protect fragile marine ecosystems (Landström, 2006). However, some studies have found that these areas are poorly managed due to inadequate institutional cooperation, lack of interagency collaboration, politics, and lack of awareness among the public (Landström, 2006; Powell, Cuschnir & Peiris, 2009).

3.4.4 International mitigation policy

In 1865, William Stanley Jevons argued that greater technological efficiency gains of a resource would lead to an increase in its overall consumption – not in its saving (Alcott 2005). This is known as Jevons Paradox, also referred to as the ‘rebound effect’ in contemporary discourse (Hall et al. 2015a), and holds merit in the discussion about the impact of carbon pricing

on tourism. As commentators point out, growth in international tourism has been possible from technological advancements in aviation, greater disposable income, and relative decline in the cost for air travel over the past 40 years (Becken & Hay 2007; Pentelow & Scott, 2010; Scott et al. 2016). While these trends and advancements have made tourism in developing countries and SIDS more accessible, tourism-related air travel is also anticipated to increase substantially (Gössling & Peeters, 2015; Pentelow & Scott, 2010; Lenzen et al. 2018; Scott et al. 2012a; UNWTO et al., 2008).

Considering that tourism-related emissions will increase by 169% between 2010 and 2050 (Gössling & Peeters, 2015), international organizations have begun to implement policies in order to achieve carbon neutral growth. The ICAO adopted the CORSIA in 2016 – a global offsetting plan with the intention of reducing the future impact of international air travel on the global climate (ICAO, 2018). Specifically, CORSIA (2018) aims to stabilize aviation CO₂ emissions beginning 2020 then halve emissions by 2050, compared to 2005 levels. At the time of writing, 79 states, representing 76.6% international aviation activity, have volunteered to participate in CORSIA’s pilot phase (2021-2023) and first phase (2024-2026) (ICAO, 2019). The WTTC has also recently engaged with the UNFCCC climate agenda on the global level and jointly published a Common Agenda for Climate Action with the UNFCCC. In order to achieve carbon neutrality by 2050, the WTTC and UNFCCC (2018) have committed to engaging a sector-wide dialogue on climate action in the sector and reducing travel and tourism’s contribution to climate change.

With these global agreements in mind, the tourism sector should begin to support decarbonization through policy and action. Some strategies include introducing stricter emissions standards for new vehicles, introducing fuel-efficient aircraft, improving building energy efficiency codes, refurbishing towards low-carbon operations, and supporting green electricity grids (Scott & Gössling, 2018). The recent carbon tax on petrol vehicles and diesel three-wheelers in Sri Lanka (‘Carbon tax from Jan 1: DMT’ 2019) supports the government’s transportation policy to have a fully electric transportation network by 2040 (Ministry of National Policies, Economic Affairs, Resettlement & Rehabilitation, Northern Province Development, Vocational Training & Skills Development and Youth Affairs, 2018). It should be noted that although the government of Sri Lanka intends to generate 100% of domestic electricity through renewable resources by 2050 (UNDP & ADB 2017), Sri Lanka’s state

electricity utility board, the Ceylon Electricity Board (CEB), has stated that coal will be the main source of power through 2034, accounting for 40% by 2025 and 50% by 2034 (CEB, 2017). On the other hand, renewable energy will only account for 40% by 2025 and 33% by 2035 (CEB, 2017), therefore contradicting the national GHG emission reduction targets.

Carbon pricing will also play a pivotal role in supporting decarbonization (Scott & Gössling, 2018). Already, 40 countries and over 20 sub-national jurisdictions have begun to use carbon pricing in all areas of business, either as a shadow price or innovation incentive, with an additional 100 countries planning or considering to do the same (World Bank, Ecofys & Vivid Economics, 2016). Given the global commitment of limiting global warming to well below 2°C above pre-industrial levels, and the importance of tourism to the world economy and progress towards the UN SDGs, Sri Lanka's government, policymakers, industry leaders and tourism businesses should also prepare for eventual carbon pricing as well (Scott & Gössling, 2018).

3.4.4.1 Impact of international mitigation policy on tourism

In order to meet the goals set out in the Paris Agreement, of limiting global warming below 2°C over pre-industrial levels (IPCC 2014a), the tourism sector must reduce its carbon emissions by 70% by 2050 from 2015 levels (Scott & Gössling, 2018). To achieve this, the tourism sector must be prepared for a 2.2% reduction from absolute emissions levels per annum between 2015 to 2035 (Gössling & Scott, 2018). Current carbon taxes are useful social analogues for how the tourism sector will be affected by carbon levy costs associated with the CORSIA scheme (Scott & Gössling, 2018). In 1994, the Air Passenger Duty (APD) was introduced in the United Kingdom and was intended to be a revenue-raising scheme. The APD was also estimated to reduce carbon emissions by 0.3 million tonnes per year by 2010-2011 (Scott & Gössling, 2018). The current two-tier system requires all outbound tourists to pay an excise duty between £13 (within Europe, as well as Morocco, Libya, Algeria, and Tunisia) and £75 (for all other destinations) in order to reduce travel demand and carbon emissions (Seetaram, Song & Page, 2014). However, as Seetaram et al. (2014) point out, the economy influences travel demand of British tourists more than the cost of travel and the APD. Therefore the effectiveness of APD to reduce carbon emissions has been limited since tourists are generally prepared to absorb marginal price increases in order to meet their travel needs (Seetaram et al. 2014). Markham, Young, Reis, and Higham (2018) reached a similar conclusion in their analysis of the Clean Energy Future (CEF), a carbon pricing measure of AU\$23-25 that was implemented in Australia

for large corporations – including two major domestic airlines (Qantas and Virgin Australia) – between 2012-2014. However, the authors found no evidence that the CEF had reduced the level of domestic aviation in Australia and concluded that higher carbon prices would be necessary to reduce air travel demand and travel emissions (Markham et al. 2018).

Sri Lanka's tourism sector will likely be affected by transboundary impacts from tourism and non-tourism related adaptation and mitigation policies for climate change (Scott et al., 2015) since long-haul destinations are dependent on air travel and global oil prices (Pentelow & Scott, 2010). At the time of writing, flights to and from Sri Lanka are currently exempt from offsetting requirements under CORSIA (ICAO, 2018). However, this may change as carbon reduction in the aviation sector continues to gain momentum and as new states decide to participate in CORSIA voluntarily (ICAO, 2018). Tourism decision making is influenced by the rising costs of essential tourism services (e.g., transportation, accommodation, attractions), especially if mitigation measures include emissions charges (Richardson & Witkowski, 2010) or carbon pricing (Scott & Gössling, 2018). Higher fuel costs will also add pressure to the aviation sector – as was evident in 2008 when airlines added a fuel surcharge to plane tickets in response to the increase in oil prices (Pentelow & Scott, 2010). Consequently, tourists may seek alternatives to air travel due to potential increase in air travel costs (Pentelow & Scott, 2010). Tourists from temperate countries may also choose to visit areas closer to their home country since destinations in higher latitude and altitude will likely have more optimal climate conditions for tourism (Hamilton et al. 2005) and may become cheaper to travel (Pentelow & Scott, 2010). This will become problematic for long-haul destinations and island nations that have limited alternatives for low-fuel transport methods for international tourists (Gössling et al. 2008).

The potential impact on rising air travel costs is a concern that has already been raised by long-haul tourism markets in Asia-Pacific (e.g., Australia, New Zealand, and Indonesia) and SIDS in the Pacific islands and Caribbean islands (Scott et al., 2012a). However, as studies in the United Kingdom (Seetaram et al., 2014) and Australia (Markham et al., 2018) have shown, tourist arrivals will not likely be impacted by currently proposed mitigation policies – especially in the absence of substantial carbon pricing or a “serious global climate policy framework” (Gössling et al. 2008, p.896).

CHAPTER 4

METHODS

4.1 Introduction

This chapter describes the two research phases of the embedded case study design used to examine the questions that guided this study. According to Yin (2003), an embedded case study is a case study containing more than one unit of analysis. The embedded case study design allows for multiple methods to be used within the sub-units of analysis (Scholz & Olaf 2002). The first phase included a review of public policy documents related to the tourism and climate change in Sri Lanka, while the second phase included an embedded case study of Unawatuna to examine local stakeholder perception of climate change in the tourism sector. The chapter concludes with a discussion about the limitations of the methodology. The research methods used for this study received ethics clearance from the Office of Research Ethics at the University of Waterloo in July 2017.

4.2 Phase I: Policy content analysis

Assessing the policy response may provide insight as to why government and policymakers face an implementation challenge when transforming theory into action (Schipper 2016). To establish the policy context, a preliminary list of policy instruments that are relevant to both climate change and tourism domains in Sri Lanka were compiled (Table 4.1).

Table 4.1: Preliminary list of policy and planning documents analyzed

	Year	Document	Document Type
Climate change	2000	First National Communication	UNFCCC communication
	2003	National Environmental Policy and Strategies	Environmental policy
	2008	National Energy Policy and Strategies of Sri Lanka	Environmental policy
	2010	National Climate Change Adaptation Strategy for Sri Lanka	Strategy
	2012	National Climate Change Policy of Sri Lanka	Climate policy
	2016	Second National Communication	UNFCCC communication
	2016	National Adaptation Plan 2016-2025	UNFCCC communication
	2016	Nationally Determined Contributions	UNFCCC communication
Tourism	1966	Sri Lanka Tourist Board Act No. 10 of 1966	Act
	2005	Tourism Act No. 38 of 2005	Act
	2011	Tourism Development Strategy 2011-2016	Strategy
	2016	Tourism Strategic Plan	Strategy

Out of this preliminary list, only the most current climate change adaptation and tourism development plans were selected for review. As such, the Tourism Strategic Plan (TSP) for 2017-2020 (MoT 2016), the only currently available tourism planning document in Sri Lanka, was selected to represent the current tourism policy domain. The National Adaptation Plan (NAP) for Climate Change Impacts in Sri Lanka (CCS & MMDE, 2016) and the Nationally Determined Contributions (NDCs) (MMDE, 2016b), both documents prepared under the UNFCCC, were selected to represent the climate change policy domain.

Given that tourism was identified as one of the most vulnerable sectors to climate change in Sri Lanka (CCS & MMDE, 2016; MMDE, 2016b), it was important to examine the coherence between the climate change and tourism. The policy analysis framework by Santos-Lacueva and González (2018) provided a structure for reviewing the tourism and climate change policy instruments. The policy review focused on three measures of analysis (referred to as ‘phases’ in Santos-Lacueva and González [2018])- frame significance, policy scope, and connotation of each policy instrument (Table 4.2). The findings of these three measures of analysis will indicate whether or not there is a coherence between the two policy domains.

Table 4.2: Policy analysis framework

Measure of analysis	Analysis	Indicators
Frame significance	Mentions	- Number of times referenced - Own section
Policy scope	Diagnosis	How the problem is considered and which aspects stand out in comparison with expert knowledge
	Objectives	Inclusion between principles and objectives
	Instruments	- Coordination of stakeholders - Procedural implementation tools - Funding - Knowledge and research - Communication and awareness raising
Connotation	Cause-effect	- Tourism contributes - Tourism is affected
	Consequences	- Positive - Negative - Neutral
	Perception of risk	- Present - Future

Reproduced from Santos-Lacueva-González (2018)

4.2.1 Frame significance

A keyword search was used to determine the number of times that tourism was cited in the NDCs and NAP, and the number of times that climate change was cited in the TSP. The analysis also considers whether each phenomenon, being climate change or tourism, has a separate section in the documents as well. Moyle et al. (2018) referred to this measure of database analysis as ‘issue identification’ (p.709).

4.2.2 Policy scope

The sections of the policy documents where relevant citations were located, were then analyzed based on how the climate change and tourism phenomenon was framed in the policy instrument (referred to as the ‘diagnosis’ by Santos-Lacueva & González [2018]), its goals, and the measures to achieve the goals. As Santos-Lacueva and González (2018) note, “a citation in a diagnosis implies that the phenomenon is linked to the idea of a problem. A citation in policy goals implies that the phenomenon is part of the main values and guidelines... a citation in the measures implies a will to act, although this in itself does not guarantee actual implementation” (p.7). An additional analysis was conducted to determine how each policy domain conceptualizes climate change impacts on the tourism sector. Understanding the policy scope of how climate change and tourism are integrated will provide insight on how the tourism sector is planning for climate change adaptation in practice (Moyle et al., 2018).

4.2.3 Connotation

The final measure of analysis examined how the tourism or climate change phenomenon is perceived in the policy domain based on a) the multidimensionality of the tourism and climate change relationship, b) the consequences of projected impacts of climate change on tourism, and c) the temporal perspective of impact.

4.3 Phase II: Embedded case study

A case study is an in-depth “investigation of a specific site, community, or event as a means of understanding a wider issue, process or trend” (Castree, Kitchen & Rogers, 2013, p.19). An advantage of the case study approach is that it allows researchers to explore and describe a phenomenon using multiple data sources (Baxter & Jack, 2008; Scholz & Olaf 2002). This approach is relevant when (1) the research objective is to answer “how” and “why” questions, (2) participant behaviour cannot be manipulated in the study, (3) there is a focus on

contextual conditions because they are potentially relevant to the phenomenon that is being studied, or (4) the boundaries are not explicit between the context and phenomenon (Yin, 2003). An case study approach was undertaken since this thesis also seeks to understand the how local stakeholders perceive the issue of climate change in the context of other socioeconomic, cultural, environmental, and institutional forces that affect their livelihood (McCubbin et al. 2015). The case study approach used in this study relies on multiple data collection methods including content analysis, field observations, and semi-structured interviews, of which are described below. The limitations are addressed at the end of the chapter.

4.3.1 Justification of embedded case study site

Unawatuna is a small coastal town located in the south-western region of Sri Lanka, approximately 120km south of Colombo (Figure 3.1). It is estimated that three out of five households in Unawatuna rely on the tourism sector for their primary source of income (MoT, 2016). Unawatuna beach, located in an enclosed bay, stretches out 1.5km and is a popular destination among foreign and domestic tourists. Just off-shore are three coral reefs, the *Galapita Gala*, *Bonavista*, and *Napolean*, which provide opportunities for snorkeling, diving, and glass-bottomed boat tours (Rathnayake, 2015; Senevirathna et al., 2018). There are also several services located near the beach, including spas, souvenir shops, accommodation units, restaurants and bars, and businesses offering water-based excursions, such as jet boating, snorkeling, and diving.

Once famed as “the best beach in the world” by the Discovery Television Channel (Rathnayake 2015), Unawatuna beach experienced accelerated coastal erosion between 2007 to 2015 (Senevirathna et al., 2018). Although a breakwater was constructed by the CCD to protect the beach, some commentators have argued that it was maladaptive since it accelerated the rate of erosion (Rathnayake, 2015; Senevirathana et al., 2018). As Rathnayake (2015) emphasized, any human interference in an ecosystem will be harmful due to a change in natural processes. During this time, 30 beach hotels reported property damaged (Mahadura, 2013) and overall tourism activity declined by an estimated 26% (Senevirathna et al., 2018). Unawatuna’s dependence on 3S tourism makes it highly vulnerable to coastal risks under future climate change scenarios, similar to the extent of erosion that was experienced in Unawatuna Bay (Figure 3.2), and as such, was selected as the embedded case study site to examine local perceptions of climate change impacts on the tourism sector and adaptation strategies.

Figure 4.1: Map of Sri Lanka and Unawatuna



Source:
Google Maps (2018)

Figure 4.2: Impact of erosion on Unawatuna beach



Sources: Samarajiva (2014) & Mahadura (2013)

4.3.2 Content analysis

Content analysis was used to investigate and describe interview and textual data that were collected for this study (Prior, 2014). Documents regarding tourism and climate change in Sri Lanka were analyzed for this embedded case study, including peer-reviewed publications,

community profiles, project reports, media sources, and press releases. Data on historical and future projections for temperature and precipitation from the World Bank Climate Change Knowledge Portal (2018a) was also consulted as an additional resource. Google Earth satellite images of Unawatuna Bay from 2004 to 2015 were captured to illustrate the physical impact of erosion along the bay. Documents provide supporting reference to help the researcher establish an understanding about the conditions that are described by interview participants (Yin, 2003). Although content analysis is a useful method, not all documents provide an accurate or complete record of events (Bowen, 2009), especially if it is a contested topic (Buultjens et al., 2016). As such, content analysis, semi-structured interviews, and field observation were studied together as a means of triangulation; the use of mixed-methods and information sources to confirm or corroborate the findings (Bowen, 2009).

4.3.3 Field observations

Fieldwork occurred between June 2017 to March 2018 while I was living in Galle town. During this period, my time divided between fieldwork and my volunteer contract with the Ruhunu Tourist Bureau (RTB) of the Southern Provincial Council. This opportunity was made possible through Uniterra, a joint program of World University Services of Canada (WUSC) and Centre for International Studies and Cooperation (CECI). Belonging to these networks allowed me to navigate between different social circles due to my identity as a tourist, a volunteer with a Colombo-based non-government organization (NGO), and a volunteer at a government authority in Galle district. As such, while this study focuses on the vulnerability of tourism to climate change, my fieldwork and contract supported each other to enable a better understanding of tourism in Sri Lanka and the Southern Province. Details of both institutions are provided below.

WUSC and CECI are two Canadian non-profit development organizations that operate in 25 countries worldwide. Uniterra, a joint WUSC and CECI program, employs a market-based approach to stimulate economic growth and facilitate market access for women and youth. At the time of writing, Uniterra is in the final year of a five-year program that began in 2015. The Uniterra program in Sri Lanka is made up of a local team of experts who partner with organizations in the tourism and garment industries. Canadian volunteers with relevant expertise and knowledge work with local civil society organizations, businesses, and government institutions to complete a specific mandate. Between September 2015 to April 2016, I worked with Uniterra's head office in Colombo as a Research and Program Support Officer.

Relationships with project advisors who emphasized the need for such research were formed during this time.

RTB is a local government institution that operates through the Southern Provincial Council. The goal of RTB is to develop sustainable tourism in lesser-known tourism destinations within the Galle, Matara, and Hambantota districts. A key priority of RTB is to identify sensitive ecosystems and to develop conservation areas through community-based ecotourism projects. RTB also provides training and workshops to encourage communities to be more inclusive of tourism activities. In order to diversify the tourism product in this region, destinations of focus are generally inland and towards the central highland. One of my responsibilities as an Environmental Analyst was to develop and mobilize an action plan that would increase stakeholder awareness about the environmental impacts of tourism-related activity in lesser-known tourism destinations. Target beneficiaries were public sector workers, tourism information officers, and rural community organizations in Galle, Kanneliya, Kottawa, Rekawa, Deniyaya, Ambalangoda, and Madunagala.

4.3.4 Semi-structured interviews

Open-ended, semi-structured interviews were chosen for more versatility in conversation (Baxter, 2016). As discussed above, these interviews were used as a means of triangulation to help me understand how tourism was being developed and managed in Unawatuna. I also needed to understand how participants perceived climate change in order to determine whether or not climate change was a priority or, at the very least, a concern among them. In some cases (n=2), a local translator was used when the interview was conducted in Sinhala. The translator was chosen out of three candidates based on their experience working with English-speaking researchers. The selected translator signed a confidentiality agreement to ensure the anonymity of the participants and non-disclosure of the interview.

4.3.4.1 Participant selection

Unlike quantitative research, that relies on the number of participants, qualitative research places less emphasis on the representativeness of the sample size (Winchester & Rofe, 2016). The value of this approach is in its ability to uncover the meanings that are layered in specific contexts (Winchester & Rofe, 2016). Since I previously worked in Colombo, I had a personal and professional relationship with members of the civil society and government

institutions. Individuals affiliated with WUSC and RTB served as project advisors and acted as gatekeepers to other informants. A gatekeeper connects a researcher to potential participants through their personal or work relationship with them (Lavrakas, 2008). Tourism stakeholders are defined by Simpson et al. (2008, p.36) as:

those directly involved in the tourism sector or whose livelihoods are affected by tourism (e.g., government ministries, local government, tourism industry representatives, tourism labour representatives, local businesses and communities), and those in other sectors that might be affected by tourism adaptations (e.g., transportation, energy or agriculture), whose adaptations might affect tourism (e.g., insurance industry, health sector), or that have other relevant expertise (e.g. universities, non-governmental organizations).

To reflect this definition, participants were chosen based on three profiles: (1) Institutional leader - local, provincial, and national government representatives involved in tourism or climate change, (2) Local tourism stakeholders - local or expatriate tourism service providers, and (3) Experts – tourism and/or climate change professionals. For this research, an institutional leader is conceptualized as an adult, 18 years or older, who has sole or shared responsibility for designing or administering climate change adaptation policies or designing or administering tourism development initiatives in Sri Lanka. A local tourism stakeholder is conceptualized as an adult, 18 years or older, a resident in the Galle district, with a minimum of 5 years of experience in the tourism sector; knowledge of climate change or environmental risk is not required. Tourism stakeholders include individuals and businesses directly or indirectly engaged in the industry including accommodation, restaurants, tour guides, and tour operators. Finally, experts from the civil society, private sector, and research community with experience in tourism and/or climate change were also selected as potential participants as well.

4.3.4.2 Data collection

Based on the above criteria, potential participants were selected based on their knowledge and experience in either climate change or tourism in Sri Lanka. An initial list of contacts was compiled based on individuals who were identified by project advisors and through an Internet search. The list expanded through snowball sampling, a recruitment method by which potential participants are identified through social networks of project advisors or study participants (Faugier & Sargeant, 1997). The snowball sampling method begins with the researcher and

enables them to gain initial contacts of hard-to-reach populations (Faugier & Sargeant, 1997) – especially in contexts that may be unfamiliar to them (Browne, 2005; Howitt & Stevens, 2016).

Project advisors acted as gatekeepers and advised on which individuals could be approached by myself and which individuals would be better reached through a personal introduction. Two methods of engagement were used to establish the initial contact. The first method was through a customized email that introduced myself, the purpose of the study, the knowledge and expertise of the individual that would be beneficial to the research, and a request for participation. This method was most useful for reaching out to institutional representatives, experts, and local tourism stakeholders who were part of a network such as a hospitality chain. If an email was not available, a telephone call was made to the office of the contact. However, this was not a practical approach to reach out to local tourism stakeholders in Unawatuna. In some cases, a business email could not be located while in other cases if an email was sent, I did not receive a response. I also attempted to use informal channels such as social media to establish a direct relationship with tourism stakeholders in Unawatuna. While this method was useful to reach out to expatriates working in the tourism sector, it was not effective for local tourism stakeholders. In light of these challenges, project advisors and the translator were immensely helpful in establishing connections and communicating my research intentions to local tourism stakeholders.

Potential participants were provided with an information and consent form that stipulated the purpose of the research and their role as a participant. They were also informed of their right to withdraw at any time during the interview. If they agreed to a meeting, participants signed a confidentiality agreement that ensured their anonymity in the study, consent for audio recording, and permission for the use of anonymous quotations in any final product of this research. Interviews with tourism stakeholders were conducted in places of familiarity, such as the beach, hotels or restaurants, and felt informal and relaxed. Out of this subcategory, two participants requested to conduct their interview in Sinhala. Interviews with government representatives and professionals, such as consultants and researchers, were held in their office. All of these interviews took place in Colombo except for one interview with a consultant in Galle.

Although the tourism sector is developing rapidly in Sri Lanka, tourism is still highly politicized. As such, the anonymity of participants is maintained throughout this thesis. Identifying information, such as name, employer, and contact information, are not disclosed.

Instead, participants are identified by a study code, denoted by a letter of the alphabet between A to N. The summary of participants is presented in Table 4.3.

Table 4.3: Summary of participants

	Occupation	Profile*	Location	Medium	Translator	Expatriate /Local
A	Tour guide operator	2	Colombo	In person	No	Expatriate
B	Scuba diving instructor	2	Galle District	In person	No	Local
C	General manager of a government authority	1	Colombo	In person	No	Local
D	Hotelier	2	Colombo	In person	No	Local
E	Surf instructor	2	Galle District	In person	Yes	Local
F	Trishaw driver	2	Galle District	In person	Yes	Local
G	Restaurant and guesthouse owner	2	Galle District	In person	No	Local
H	Consultant	3	Colombo	In person	No	Local
I	Senior official of national tourism association	1	Colombo	In person	No	Local
J	Tour agency operator	2	Galle District	Phone	No	Expatriate
K	Hotelier	2	Galle District	Phone	No	Expatriate
L	Research economist	3	Colombo	In person	No	Local
M	Hotelier	2	Galle District	In person	No	Local
N	Consultant	3	Galle District	In person	No	Local

* Numerical classification for profiles:

(1) local, provincial and national government representatives involved in tourism or climate change

(2) local and expatriate tourism stakeholders

(3) tourism and/or climate change professionals

The response rate was 25%, with 55 people contacted and 14 people participating. 86% (n=12) of the interviews were conducted in-person, in the English language, and in the city of Colombo or within the Galle District. With the exception of one consultant from Galle, all of the government representatives and experts were from Colombo. Two participants identified as representatives from national government institutions that oversaw activities in either tourism or climate change. These stakeholders either assisted in the development of the tourism policy and national climate communication or have undertaken activities related to tourism and climate change at the national scale. Nine participants, categorized under local tourism stakeholders, identified themselves as hoteliers, tour operators, a surf or scuba dive instructor, a trishaw driver, and a restaurateur. The average length that their businesses have been in operation is just over 13

years (ranging from 5 years to 27 years). Three interview participants identified as tourism or climate change professionals and specialized in tourism strategy consultation, corporate sustainability consultation and audits (in carbon, waste, energy, and water), and climate change policy research.

Since participants vary in experience and education, an interview guide was needed to ensure that research objectives were met (Table 4.4). In this way, certain themes consistently emerged out of all of the interviews. If the interview participant was not directly involved with a tourism business, then the interview questions were amended to reflect the tourism sector. This allowed for comparability across all participants.

Table 4.4: Interview guide themes and sample questions for local tourism stakeholders

Theme	Sample Question
Background	What do you do for a living? What is your role in [tourism/climate change]? How long have you worked in the industry?
Climatic conditions affecting tourism & coping strategies	Does climate or weather affect your business? How has your business been affected by [flooding/increased temperature/erosion/sea level rise/ocean acidification/coral bleaching]? How does climate change affect tourism? How did you deal with the problems that you faced?
Non-climatic conditions affecting tourism & coping strategies	What challenges did your business face in the past? What are the current problems affecting tourism in Unawatuna? How did you deal with the problems that you faced?
Future challenges and barriers to tourism	What are the short-term challenges facing tourism/your business? What are the long-term challenges facing tourism/your business? What are the major concerns your office has in regards to extreme weather and climate change?

Adapted from McCubbin et al. (2015)

4.3.4.3 Data analysis

Data analysis of interview transcripts helps researchers discover new knowledge and insights from the perspective of the participant (Maxwell, 2009). All of the interviews were recorded using a smartphone and the voice memo of each recording was transcribed by the same individual who was the translator for this study. A confidentiality agreement was also signed for their role as a transcriber to ensure the anonymity of the participants and non-disclosure of the interview. The qualitative data analysis program, NVivo, was used for coding the interview

transcriptions. Coding is the categorizing process by which all of the data pertaining to a recurring theme is organized, compared, and modified for further analysis (Maxwell, 2009). The nine themes that emerged from participant interviews are presented in Chapter 6.

4.4 Limitations

While much of geographical research is arguably cross-cultural (Howitt & Stevens, 2013), qualitative research in a different country is complicated by language, culture, race, gender, and ethnicity. Researchers engaged in this type of study are encouraged to consider their positionality. Positionality refers to the researcher's "social, locational, and ideological placement relative to the other participants in it" (Hay 2016, p.450). My identity as a female Chinese-Canadian researcher, who is linked to a Canadian NGO and a local government institution, may have influenced the response rate, how participants responded to the questions, or how I interpreted their responses (Shakeela & Becken 2015).

Despite having previously worked in Sri Lanka, the interview process was more challenging than I had anticipated. Sri Lanka's official languages are Sinhala and Tamil. English is considered to be the 'working' language in Sri Lanka, especially Colombo, and is reserved for certain formalities in the public and private sector. As such, I was prepared to conduct the interviews in English or, if requested by the participant, in their native language with the aid of a translator. While I anticipated the language barrier to be an obstacle to this research, I did not expect the use of a translator to be a constraining factor. The use of a translator was also found to be a "delicate matter" from the perspective of a Swedish woman who conducted her doctorate research on collaborative coastal management in Sri Lanka (Landström 2006, p.44). While most of the interviews were manageable in English or Sinhala, some interviews were difficult to conduct despite being moderated in English. When I discussed this with my translator, she explained that English was a sign of status so inviting a translator would reflect poorly on the participant's reputation. Similarly, Landström (2006) explained that some "interviewees did not feel comfortable with the interpreter's presence and/or felt uncomfortable about the fact they could not quite master English" (p.44).

Another limitation is the use of snowball sampling for participant selection. While snowball sampling helps broaden the network of potential participants, it is criticized for being a biased sampling technique (Faugier & Sargeant, 1997). Browne (2005) argues that this method is limited because it includes and excludes certain individuals from participating. The exclusion of

individuals may reinforce “hidden populations” that may be relevant to the study (Browne, 2005, p.51). Throughout the data collection process, I found that the meetings with government representatives were more challenging to arrange. In many cases, I was denied an interview. This may have been due to issues related time, their level awareness of climate change and tourism, or low prioritization of climate change, that did not warrant an interview. It was pointed out to me by my colleagues at RTB that local government officials are constrained by a heavy workload and a lack of time; setting time aside “for a foreigner to ask questions would not be worth their time” (personal communication, October 2017). My colleagues also suggested that the complex subject matter could also be a reason for the low response rate from government officials. For example, I was not able to interview a representative from the local tourism authority because “[he] did not know enough to help [me]” (personal communication, September 2017).

Consequently, the lack of representation of government officials and local authorities is a limitation of the research. The perspective from this group would have added another dimension to the research since local authorities are responsible for the management of coastal areas and regulation of tourism activities (Landström 2006). Since my study drew on my social and professional networks, the range of potential participants was consequently limited. Ultimately, my position as a young Chinese-Canadian woman, who previously worked with an NGO in Colombo and who was living in a small southern coastal tourist town in Sri Lanka, was central to the formation of my study sample. As such, the snowball sampling technique did not allow for a representational sample of tourism and climate change stakeholders as I would have preferred.

CHAPTER 5

RESULTS I: POLICY REVIEW

5.1 Introduction

An objective of this research is to review the national policy coherence between tourism strategies and climate change communications and plans to understand how the sector is preparing for climate change. The first section outlines the national policy instruments that have promoted tourism development and climate change adaptation in Sri Lanka. The second section reviews the policy coherence between national policy and planning instruments using the climate change and tourism policy analysis framework by Santos-Lacueva and González (2018). Insight about policy coherence from interview participants at the national level are also explored here. The chapter concludes with a summary of the policy review.

5.2 Climate change and tourism policy domains

5.2.1 Climate change

The government of Sri Lanka has taken significant steps to address climate change and its impacts – though there is still much to be done (Buultjens et al., 2018). Sri Lanka ratified the UNFCCC in 1993 and released its Initial National Communication under the Convention in 2000 (MMDE, 2000). Early environmental policies, including the National Environmental Policy (2003) and the National Energy Policy (2008), were legislated to fulfill Sri Lanka’s constitution to protect, conserve, and enhance the environment. While climate change is not the main focus in these policies, both contain some reference to climate change and the need for climate adaptation and mitigation of GHG.

The Ministry of Environment established the Climate Change Secretariat (CSS) in 2008 in response to the growing need to develop more focused strategies that addressed climate change at the national level. In 2010, the CCS introduced the National Climate Change Adaptation Strategy for Sri Lanka, laying out a framework for action and investment to foster adaptation efforts between 2011 to 2016. In 2012, the government of Sri Lanka legislated National Climate Change Policy that recognized climate change as an immediate and potentially irrepressible threat (MMDE, 2012). The National Climate Change Policy also emphasized need to take action to “[address] climate change issues locally while engaging in the global context” (MMDE, 2012, p.2). In the same year, Sri Lanka submitted its Second National Communication

on Climate Change (2016) under the UNFCCC. In 2016, the Ministry of Environment submitted its first Nationally Determined Contributions (NDCs) and National Adaptation Plan (NAP) for 2016 to 2025.

Sri Lanka's NDCs focuses on mitigation, adaptation, loss and damage, and means of implementation across 14 sectors, of which seven were identified as the most vulnerable sectors to climate change (MMDE, 2016b). Highly vulnerable sectors included: Health, Food security, Water and irrigation, Coastal and marine, Biodiversity, Tourism and recreation, and Urban, city planning, and human settlements. In 2010, the Ministry of Environment released Sector Vulnerability Profiles (SVPs) for each economic sector. Currently, Sri Lanka is in the readiness phase of the NDCs and is preparing for full-scale implementation between 2021 to 2030. The NDCs for the tourism and recreation sector are to (MMDE, 2016b, p.23):

1. Adapt and alter conditions and destinations of the tourism and recreation sector;
2. Increase the preparedness of tourism and recreation operation to extreme weather conditions;
3. Assess the current promotional strategies with connections to emerging scenarios of climate change; beach tourism and nature destinations;
4. Improve energy efficiency in tourism-based establishments by using available best alternative environmental friendly energy sources, solar and wind power, biomass, and;
5. Introduce resource management mechanisms into tourism to minimize damage to the existing ecosystem (with a focus on waste management, solid and waste water, in areas prioritized for tourism areas).

The Ministry of Environment recognizes that “climate change can affect desirable characteristics associated with each of these attractions, simultaneously creating problems for operational undertaking of travelling and leisure activities. Besides, it can affect infrastructure facilities of the tourism industry making them vulnerable to various hazards.” (p.22). The Ministry of Environment (2016a) has proposed new setback standards for development activities in the coastal zone based on location and level of vulnerability though recent studies have also examined economically optimal setback ranges that balance potential economic gain from investing in coastal zones with the risk of coastal vulnerability due to sea level rise and coastal erosion (Dastgheib et al., 2018b). For example, Dastgheib et al. (2018b) proposed an

economically optimal set-back line between 12m and 175m in the East Coast (representing an estimated 200km long coastal stretch). The Ministry of Environment (2016a) also recommended more stringent guidelines for issuing permits for tourism and recreation development within the coastal zone (e.g., near coral reef areas, sea grass beds, National Parks, or Conservation Areas). It is unclear whether or not the Ministry of Tourism has plans to internally address the NDCs.

Consistent with the NDCs, the NAP encompasses adaptation needs of nine key vulnerable sectors as well as the cross-cutting national needs of adaptation (CCS & MMDE, 2016). The NAP includes an action plan for each vulnerable sector. Each sectoral adaptation plan is comprised of priority actions that can be undertaken by the principal sectoral ministry, in coordination with other relevant agencies. The adaptation plan for the tourism and recreation sector focus on the first two adaptation needs that were also highlighted in the NDCs: (1) Adapt and alter conditions and destinations and (2) Increase the preparedness to extreme weather conditions (CCS & MMDE, 2016). The NAP also recognizes coastal tourism, biodiversity, and cultural assets as priority areas for adaptation in the sector as well (CCS & MMDE, 2016). The priority actions for the tourism and recreation sector are to (CCS & MMDE, 2016, p.49):

1. Increase the awareness of tour industry operators on climate change and its impacts;
2. Establish emergency communication channels for tourists and operators;
3. Identify tourism facilities in vulnerable areas and make arrangements to increase the climate resilience of them;
4. Assess the current promotional strategies with connection to emerging scenarios of climate change and adjust them accordingly;
5. Conduct research studies on climate change impacts on tourism and recreation.

The CCS also has plans to establish Sectoral Climate Cells (SCC), consisting of government officials, private sector actors, community organizations, and non-government organizations (NGOs), for each vulnerable sector (CCS & MMDE, 2016). SCCs will be responsible for the coordination and implementation of the adaptation plan in their respective sectors. Provincial Adaptation Cells (PAC) will be responsible for implementing actions within their jurisdiction. The National Working Group (NWG), comprised of lead agencies and non-state representatives, will be tasked with the implementation of adaptation actions that relate to the cross-cutting national areas. However, these proposed governance structures have not been established at the time of writing (Pallawala 2018). Pallawala (2018) further emphasized that the meetings between

the District and Divisional Coordinating Committees, as well as professional associations between Mayor, Chief Ministers, and Chief Secretaries, are “not organized regularly but could be very influential in terms of vertical institutional integration and mainstreaming climate change into subnational level planning and action processes” (p. 27). These are among the many actions that have planned to take place during the Foundation Building Stage (2016-2019) and the Development Stage (2020-2022). The Goal Achieving Stage will occur between 2023-2025 (CCS & MMDE, 2016). Time horizons of the NAP are presented in Table 5.1.

Table 5.1: Time horizons of the NAP

Period	Stage of Plan	Review
2016-2019	Foundation building	Progress of the first stage to be reviewed at the last quarter of 2018 and necessary adjustments be made
2020-2022	Development	Progress of the both stages since 2015 to be reviewed at the last quarter of 2021 and necessary adjustments to be made
2023-2025	Goal achieving	Progress of the whole plan to be reviewed at the first quarter of 2025 and gaps and lessons for future plans to be identified

Source: CCS & MMDE (2016)

5.2.2 Tourism

As Chapter 3 explained, the war and the tsunami caused the tourism sector to suffer immensely. In efforts to reorganize tourism during the war, the Sri Lankan government ratified the *Tourism Act No. 38 of 2005*, replacing the *Sri Lanka Tourist Board Act No. 10 of 1966*. However, due to political complications from the war, the *Tourism Act No. 38 of 2005* only came into effect in 2007 (Calgaro & Cochrane, 2009; Buultjens et al., 2016). The *Tourism Act No. 38 of 2005* established four tourism institutions under the Ministry of Tourism, including the SLTDA, SLTPB, SLCB, and the SLITHM.

Following the war, the Ministry of Economic Development launched the Tourism Development Strategy for 2011-2016. This plan was focused heavily on economic growth with goals to increase tourist arrivals from approximately 856,000 to 2.5 million and to raise sector employment to 500,000 people. There was limited reference to sustainable development and none to climate change (Buultjens et al., 2018). By the end of 2016, the tourism industry achieved 2,050,832 visitors (84% of 2011 target), with approximately 336,000 tourism sector jobs (67.1% of 2011 target) (SLTDA, 2017a). The tourism sector is currently guided by the

three-year Tourism Strategic Plan (TSP) for 2017-2020. The TSP recommends pathways for development with a long-term view of contributing to the UN SDGs and Vision 2025.

The mission of tourism under the TSP is to be a “high-value destination offering extraordinary experiences that reflect Sri Lanka’s natural and cultural heritage, are socially inclusive and environmentally responsible, and provide economic benefits to communities and the country” (MoT, 2016, p.11). The high-level objectives until 2020 are to (MoT, 2016, p.17):

1. Increase direct and indirect employment to 600,000 people, of which 10% of the workforce are women;
2. Generate more opportunities for domestic and foreign direct investment, with a target of US\$7 billion earned in 2020;
3. Achieve greater inclusivity and sustainability.

To achieve these objectives, the TSP identifies six transformational themes, each with corresponding strategies and actions (Table 5.2). According to the Ministry Tourism (2016), the last three themes, (4) Developing Sustainable Destinations, (5) Lifting Industry Standards, and (6) Engaging the workforce and communities, are most aligned with the SDGs.

The goals outlined in the TSP support the long-term economic vision of Sri Lanka until 2025 (MoT, 2016). Although the final strategic planning phase (between 2021-2025) has not been released at the time of writing, the presently available draft of Tourism Vision 2025 underscores the potential for Sri Lanka to be a high-value Asian island destination (MoT, 2017). According to Tourism Vision 2025, the Ministry of Tourism intends to establish tourism as Sri Lanka’s second net foreign exchange earner, raise employment through tourism to one million nationals, and to increase foreign direct investment through the industry. The emphasis will also be placed on developing a high-value sector and attracting high-spending visitors (MoT, 2017). Six market segments will be targeted based on their purchasing power and Sri Lanka’s tourism product, including: (1) MICE tourists: business travelers), (2) the grey market (post-retirement travelers aged 60 and over), (3) millennials (travelers aged 18-34), (4) culture and eco-tourists, (5) academics and experts, and (6) the diaspora (MoT, 2017). Another priority highlighted in Tourism Vision 2025 is spatial planning (MoT, 2017). Tourism Vision 2025 identifies five tourism zones that will be developed in order to improve the planning, implementation, and management of tourism activities. The zoning areas are (1) Colombo and the West, (2) North and North-Western, (3) Southern coast, (4) Hill country, and, (5) Cultural heartlands and East coast

(MoT, 2017). Progress towards Tourism Vision 2025 will be reviewed in 2020 in order to determine if any of the goals should be reassessed (MoT, 2016).

The following sections assess the policy coherence between Sri Lanka’s current climate change communication and adaptation plan, particularly the NAP and the NDCs, and the TSP.

Table 5.2: Monitoring framework for the Tourism Strategic Plan

Themes	Core strategies
1. Improving governance and regulation	1.1 Revitalize key institutions 1.2 Improve relationships, communication, and coordination 1.3 Reform core legislation and regulations 1.4 Enable business and investment
2. Understanding visitors	2.1 Improve data collection and analysis 2.2 Monitor success of marketing efforts 2.3 Demonstrate economic value of tourism
3. Marketing and communicating effectively	3.1 Sharpen brand focus 3.2 Embrace digital age 3.3 Use events and festivals to showcase products 3.4 Build stronger partnerships
4. Developing sustainable destinations *	4.1 Implement integrated geographic planning 4.2 Define tourism areas and create signature experiences 4.3 Improve access by developing key routes, hubs, and gateways 4.4 Focus on destination development through transformative projects
5. Lifting industry standards *	5.1 Improve conservation, presentation, and management of natural and cultural assets 5.2 Facilitate use of best practices at key touch points 5.3 Improve visitor information, signage, and interpretation
6. Engaging the workforce and communities *	6.1 Develop actively engaged workforce 6.2 Promote employment and career opportunities in tourism 6.3 Prioritize lifelong training and development 6.4 Engage local communities in tourism

** Includes core actions and strategies that are aligned with the SDGs*

Adapted from MoT (2016)

5.3 Assessing the degree of policy coherence

5.3.1 Frame significance

The term ‘tourism’ appears 20 times in the NDCs and 63 times in the NAP. Since the tourism and recreation sector is identified as a vulnerable sector in the NAP and NDCs, both documents contain a section on the potential impacts of climate change on the tourism sector. Furthermore, the NDCs and NAP identify the coastal and marine sector as another vulnerable

sector to climate change and recognize coastal tourism’s vulnerability to sea level rise, inundation, erosion, and extreme events.

In contrast, the discussion about climate change in the TSP is simplistic – appearing only two times in the 119-paged planning document. In most cases, the term ‘climate change’ was only included as a secondary reference to the Paris Agreement to describe the government’s commitment to lowering GHG emissions and building climate resilience. Specifically, the document states that “the TSP and tourism institutions will work closely with relevant authorities and existing national plans and strategies to achieve the SDGs and mitigate the effects of climate change” (MoT, 2016, p.13).

5.3.2 Policy scope

5.3.2.1 Diagnosis

According to Santos-Lacueva & González (2018), “where a problem is cited represents important information” (p.11). Recall that a citation in diagnosis implies that the phenomenon is linked to the observed issue, a citation in goals or objectives means that the phenomenon is embedded into the main values and guidelines, and a citation in the measures or instruments implies an intention to act (Santos-Lacueva & González, 2018). As Table 5.3 shows, climate change or tourism is framed (diagnosed) in all three documents.

Table 5.3: Policy scope between tourism and climate change documents

Domain	Phenomenon	Document	Year	Diagnosis	Goals	Measures
Climate change	Tourism	Nationally Determined Contributions	2016	Yes	Yes	N/A
		National Adaptation Plan	2016	Yes	Yes	Yes
Tourism	Climate change	Tourism Strategic Plan for 2017-2020	2016	Yes	No	No

5.3.2.2 Goals

Considering that the NAP is an adaptation planning document, climate change adaptation actions for the tourism sector are recommended. Yet despite the recognition of tourism’s vulnerability to climate change impacts by international agencies (UNWTO et al., 2008), national expert knowledge (Athulathudmudali et al., 2011; Buultjens et al., 2018; Nianthi & Shaw, 2015; Senaratne et al., 2009), and national climate change communications under the

UNFCCC (CCS & MMDE, 2016; MMDE, 2016b; MMDE 2011b), the TSP does not go beyond very basic issue identification of climate change (Moyle et al., 2018). As such, climate change is not considered in any of the goals or measures in the TSP. Table 5.4 illustrates how each policy domain diagnoses the phenomenon with regards to specific the climate change impacts that are described in Chapter 3.

Table 5.4: Climate change impacts in the tourism and climate change policy domain

	1	2	3	4	5	6	7	8	9	10	11	12
NDC	Yes (ID)	Yes (ID)	Yes (ID)	No	No	Yes (ID)	Yes	Yes (ID)	Yes (ID)	No	No	GHG emissions, waste management, solid and waste water, resource management mechanisms, renewable energy
NAP	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Water resources, coastal area, health, infrastructure, biodiversity, transportation
TSP	No	Yes	No	No	No	No	No*	No	No	No	No*	Water, energy, waste, habitat preservation, marine and wildlife conservation

Legend:

1=Temperature, 2=Rain, 3=Flooding, 4=Landslide, 5=Cyclone, 6=Drought, 7=SLR, 8=Coastal erosion, 9=Acidification, 10=SST, 11=Coral bleaching, 12=Other risks and impacts described

(ID) = Reference did not directly relate to tourism but was cited in another location within the document and could have an indirect impact on tourism (as per Scott et al. 2012a four-pathways).

The NDCs highlights tourism’s contribution to global GHG, the need to improve energy efficiency in tourism establishments, and the need to manage tourism’s solid and water waste. Sea level rise is the only climate risk that was identified in the NDCs that would affect tourism destinations in coastal and low-lying plains (MMDE, 2016b). This is an important finding because the NDCs identifies specific climate risks for each vulnerable sector - except for the tourism sector. According to a case study of Sri Lanka’s NAP process and actions by the Ministry of the Environment in Japan (2016, p.1):

During preparation of the National Adaptation Plan for Climate Change Impacts in Sri Lanka, there was emphasis on interaction and consensus among stakeholders. This enabled vulnerability profiling, identification of actions, and clarifying responsibilities in a short period, even without detailed scientific information.

However, according to an interview participant who a lead consultant and facilitator in the validation and finalization workshops, there was a low representation of key stakeholders from the tourism sector. This is further discussed Section 5.4.2. Nevertheless, according to Scott et al. (2012a), the potential impact of climate change on other sectors (particularly human health,

water and irrigation, and coastal and marine) could have an indirect impact on tourism (Scott et al., 2012a). This is especially true for the human health, water and irrigation, and coastal and marine sectors, where the NDCs identifies climate-induced impacts such as the spread of vector-borne diseases, water scarcity, heat stress, and coastal erosion (MMDE, 2016b). On the other hand, the NAP offers a more comprehensive picture of the climate-induced hazards, vulnerabilities, and impacts for each of the nine sectors identified. With the exception of ocean temperature, the NAP covers the impacts of all impacts that are described here in this thesis, as well as indirect impacts related to climate-induced changes in water resources, coastal ecosystems, health, infrastructure, biodiversity, and transportation.

The inclusion of climate change in the TSP is significantly lower. Temperature, in the context of global warming, is only mentioned in the TSP as a secondary reference to the Paris Agreement. Specifically, the TSP states that “the central aim of the Paris Agreement is to strengthen the global response to the threat of climate change by preventing the global temperature from rising by more than 2°C this century” (MoT, 2016, p.13). Beyond this statement, the TSP does not mention the impact of increased ambient temperature on Sri Lanka or the tourism sector. Similarly, rainfall is only mentioned in the TSP as an endnote for a plan to build an integrated golf course in either a mountainous or coastal area (MoT, 2016, p.66). The endnote states that “potential sites should be assessed based on environmental impact, climate conditions for play, rainfall to lower maintenance costs, vegetation, topography and environment for the course, as well as options for other recreation” (p.75). On one hand, the inclusion of climate and rainfall in this section suggests that the Ministry of Tourism considers climate as a resource for tourism and that steady rainfall is an opportunity for some recreation activities since it lowers maintenance costs. On the other hand, it is not known whether or not future tourism development plans are being produced with potential climate change impacts in mind. It is expected that there will be regular water shortages for a longer duration of time as temperature increases in Sri Lanka (MMDE, 2011a; CCS & MMDE, 2016). As other studies have shown, golf is a water-intense tourism activity (Gössling et al., 2012, Scott et al. 2018). This will lead to greater water consumption of the tourism sector, reduce the availability of freshwater for surrounding communities (Cole, 2012) and exacerbate water shortages in existing areas (Cole, 2012; Gössling et al., 2012).

According to the TSP (MoT, 2016), Sri Lanka's beaches are an asset for tourism (p.5, 19), especially beaches in the major coastal hubs in the south and south-east regions (p.5) in Colombo, Galle and Negombo (p.61). As such, the Ministry of Tourism (2016) plans to develop more coastal tourism projects (referred to as Transformative Tourism Projects [TTP], e.g., Coastal Forts of Sri Lanka [p.70], East Coast Sunrise Corridor [p.71], and Jaffna Island Exploration [p.72]) and more projects in previously conflict-affected coastal cities (e.g., Pottuvil and Mullaitivu [p.61]). The Ministry of Tourism (2016) also plans to develop ten niche market categories, four of which are directly related to coastal tourism, including surfing and kitesurfing, scuba and wreck diving, whale and dolphin watching, and cruises. However, with the exception of temperature and rainfall, the TSP does not mention any other climate change impact or hazard that would affect tourism. Considering such plans, the lack of discussion about the potential impact of climate change, particularly sea level rise, inundation, and coastal erosion, suggests a lack of awareness about future climate change impacts on the tourism sector at the policy level. However, the TSP does offer a short discussion about the need to protect Sri Lanka's coastline (p.65, under Core Strategy 4 – Developing Sustainable Destinations) and stresses the importance of managing waste, water, and pollution in coastal areas (p.59, p.86) in order to foster a stronger sense of ecotourism (p.86).

5.3.2.3 Measures

This section explores the coherence between tourism and climate change policy based on the five types of planning measures identified by Santos-Lacueva & González (2018). Considering the economic significance of the tourism sector to the Sri Lankan economy, and its vulnerability to climate change, tourism is highlighted as a priority area in NAP and NDCs (Table 5.6). Measures related to tourism, including the national cross-cutting measures to facilitate climate adaptation (*italicized*), are presented below. Climate change measures for the tourism and recreation sector focused on procedural implementation tools while national cross-cutting measures focused on the financial and technological needs for adaptation. On the other hand, the TSP did not include any measures related to climate change, as shown in Table 5.6.

Table 5.5: Measures related to tourism in the national climate change communications

Type	NDC	NAP
Coordination of stakeholders	- <i>Develop institutional mechanisms to mainstream climate change into development</i>	- Develop collaborative plans with key tourism stakeholders - <i>Review macro and sectoral policies to identify options for mainstreaming adaptation</i> - <i>Develop policy recommendations for addressing vulnerability to climate change</i> - <i>Restructure CCS and establish institutional mechanism (CAC, NWG, PAC)</i>
Knowledge and research	- Assess current promotional strategies with connections to emerging scenarios of climate change	- Conduct research to assess climate impacts and adaptation, focusing on nature-based tourism and coastal zones - Assess promotional strategies with connection to emerging scenarios of climate change, focusing on beach and nature destinations - Identify tourism facilities in vulnerable areas - <i>Policy study to explore monitoring, evaluation and market-based instruments to motivate adaptation</i> - Establish research network and facilities to promote <i>coordinated research and information dissemination</i> - <i>Multi-disciplinary research symposium on climate change with international participation</i> - <i>Establish National Task Force for Climate Information Products</i>
Funding	- <i>Technological and financial needs assessment for each sector</i>	- <i>Develop partnership with international climate donors, funding schemes, training providers, etc.</i> - <i>Create National Adaptation Fund to support implementation</i>
Communication and awareness	Not specified	- Increase awareness of tour operators on climate change - Establish emergency communication channels for tourism - Develop a system for short-term weather forecasts - Strengthen early warning system - <i>Enhance awareness through training programmes, in formal education, and media</i>
Procedural implementation tools	- Adapt and alter conditions and destinations - Increase the preparedness of tourism to climate change - Improve tourism's energy efficiency - Introduce resource management mechanisms to minimize damage (e.g., waste and water management)	- Diversify the tourism products to potential climate change - Increase preparedness in tourism businesses - Adjust the promotions to suit different climate scenarios (e.g., according to seasonal climate variations, rebranding, alternative destinations) - Prepare guidelines on managing emergencies in tour operations - Train tour operators on emergency management strategies

* *Italicized measures indicate national cross-cutting actions for climate adaptation*

Table 5.6: Measures related to climate change in the TSP

Type	TSP
Coordination of stakeholders	Not specified
Knowledge and research	Not specified
Funding	Not specified
Communication and awareness	Not specified
Procedural implementation tools	Not specified

5.3.3 Connotation

Table 5.7 examines how tourism and climate change are conceived in both policy domains. The three dimensions of connotation, being the cause-effect relationship, the perception of impact, and temporal perspective of impact, are considered in the table below.

Table 5.7: Connotations of tourism and climate change in the policy domain

Document	Cause-effect		Impact			Temporal	
	Tourism contributes	Tourism is affected	Positive	Negative	Neutral	Present	Future
NDCs	x	x		x			x
NAP		x	x	x			x
TSP					x		

The NDCs considers the multi-dimensional relationship between tourism and climate change, both as a contributor to global warming and a vulnerable sector to the changing conditions. Sea level rise is described as having a negative future impact on the tourism and recreation sector. Specifically, the NDCs states that “low-lying plains in the coastal zone are vulnerable to any future rise in sea level and important sectors of the economy such as tourism and fisheries could be badly affected due to the impacts of sea level rise” (MMDE, 2016b, p.2, emphasis added).

Given that the NAP is Sri Lanka’s national adaptation planning document, the document focuses on the vulnerability of tourism to climate change and did not cover aspects of mitigation. Unlike the NDCs, the NAP held both positive and negative connotations of climate change, recognizing the threats to the tourism sector but also the possibilities for the sector to “[harness] opportunities” and “[overcome] constraints on the industry” through adaptation efforts (p.83). The NAP also recognizes that climate change will have short-, medium-, and long-term impacts in Sri Lanka and explains that “emerging scenarios of climate change” (p.84) “can affect desirable characteristics associated with [tourism] attractions...[and] infrastructure facilities” (p.82). The NAP does not describe any existing climate-induced impacts on the tourism sector.

The connotation analysis for the TSP is limited since the issue of climate change was marginally integrated into the planning document. Despite citing the Paris Agreement, the TSP does not explain the cause-effect relationship between tourism and climate change and, as such, does not identify present climate change threats or anticipate future climate risks on the tourism

sector. According to Santos-Lacueva and González (2018), the connotation of a phenomenon is neutral if “it is not specified how the effects are considered” (p.7).

5.4 Perception of policy coherence

5.4.1 Low integration of climate change and sustainability in tourism sector

Interviews with institutional leaders and experts (n=5) provided some insight into the poor integration between tourism and climate change policies and limited consideration of climate change in the TSP. All of the participants agreed that although the tourism sector is vulnerable to climate change, Sri Lanka’s tourism leaders do not consider it as a priority. The three consultants emphasized the low level of participation from the tourism sector in national climate change and sustainability workshops and meetings. One consultant for the SLTDA explained that “we think there’s a big role for the tourism [sector] but...they’re not very receptive” (N3). This was supported by another participant who coordinated with the CCS on Sri Lanka’s NAP. When describing the NAP’s consultative process with the tourism sector, the participant stated:

We had a separate consultation meeting for [the] tourism sector and the participation was very minimal. We invited the key people in the tourism agencies and people at the consultant level for the Ministries – but none of them turned up. There were a few academics from tourism [from] university faculties offering tourism degrees. There were some people from the archeological department and agencies who owned tourism resources, like the CCD [but]...no one from the SLTDA showed up. So what we did was come up with a draft to send to tourism agencies who didn’t participate – just to make sure we were heading to the right direction. We didn’t get any critical comments so it seemed to be okay with them (L3).

Considering the importance of climate change to progress on the SDGs, and tourism’s perceived key contribution to the SDGs in Sri Lanka, participants also discussed the challenge of addressing climate change in the context of sustainable tourism. One participant explained,

The tourism industry is thinking about sustainable issues and green tourism because it gives them a competitive advantage. But climate change is further away from sustainable issues. Perhaps they haven’t experienced many issues due to climate change (H3).

As some commentators have argued, the tourism sector's "superficial commitment" (Shakeela & Becken, 2015, p.68) to climate change is a critical challenge facing sustainable tourism (Weaver 2011). This was also described by the previous president of a national tourism institution:

Sustainability and climate change issues, or anything related to environment for that matter, is not in the top three agenda of the SLTDA. Without a doubt. They pay a lip service to it right now, but the priority is growth. Numbers, jobs, direction, and growth. But the thing is, outsiders are looking at the [TSP] and saying 'Oh boy! We should follow Sri Lanka! Look at what these guys have done!'. The plans are there, but the execution is the problem. We even have a Director of Destination and Social Responsibility – but he has no punch. He's like a figure head for the World Bank. Nice guy though (I1).

5.4.2 Barriers to integration

When asked why they thought that the tourism sector seemed to largely overlook climate change issues, participants offered explanations related to a) uncertainty and lack of awareness about climate change impacts, b) lack of coordination and collaboration, and c) business planning cycles. Participants also suggested measures to overcoming these barriers that were related to increasing knowledge and research, communication and awareness, and the coordination of stakeholders.

Uncertainty was discussed as a key barrier among participants since they thought that climate risks in Sri Lanka were largely unknown or unclear. Three participants stated that the lack of research at the national level makes it difficult to project future impact in Sri Lanka. For example, one participant said:

The issue in Sri Lanka is that we don't have any solid evidence. We don't have any baseline data and because of this, we can't compare it. We see coral death in some areas in Sri Lanka – as high as 97%. But we don't have any research done in Sri Lanka to link [it] to climate change. The same for sea erosion. There's no solid proof, no evidence, and no conclusions (C1).

The lack of data at the national level also made it difficult to perceive potential impacts at the sector level. As one participant explained:

We have a lot of research gaps...things [have not been] proved through scientific research in terms of change and socio-economic impacts. What kind of physical changes...will affect tourism in the short or long term? (N3).

When asked how the tourism sector should be supported, the participant said that “policies need to focus on raising awareness and education about climate change, then communicate it to the main stakeholders” (N3).

Participants also stated that the institutional framework of tourism in Sri Lanka is fragmented. One participant explained that the “[Ministry of Tourism] has made decisions at the national level...but the problem is that it is not implemented properly at the ground level” (H3). When asked what the tourism sector needs in order to work collaboratively towards sustainable tourism, one participant explained that it was difficult due to Sri Lanka’s political environment:

Getting the government and private sector to work together is challenging. I don’t know what mechanisms can make it work to be very honest. Right now the political scene is so volatile, everybody’s in it for themselves. Everyone goes into politics to make money so no one is interested...working for the people. It’s just about how much money they can make. It’s evident now in the bonds, scandals – everything is coming to light. These circumstances make it difficult to get genuine government commitment to do something in conjunction with the private sector. It’s not working at all but it is vital for the future. I’m sorry, I don’t have an answer to that (I1).

Another participant noted that the government of Sri Lanka has environmental and tourism plans but it is not implemented properly due to politics:

There *are* [emphasis added] proper policies in place. If you look at environmental protection in our legal system, it’s there. Black and white. But the problem is that it’s not implemented properly at the ground-level. It’s all part of politics, whatever is happening in this country today (C1).

As Santos-Lacueva & González (2018) framework emphasized, the recognition of the tourism and climate change relationship in climate policy instruments does not necessarily mean it will be incorporated in the tourism strategy. This sentiment was shared by two participants who said that climate change needed to be mainstreamed into tourism’s strategic planning:

Climate change needs to be integrated in the [tourism] policies and plans. Just because we prepared the NAP, doesn’t mean we have done anything. They have their own priorities in their respective sectors as well but ideally the NAP should be reflected by the tourism policy and vision (L3).

The [the tourism sector has not] mainstreamed climate activities into their ministries and departments. That has to happen from the top level – the CCS – and through other line ministries... but you can't say there's nothing [happening] either. Things are happening – but at a slow pace (I1).

The planning cycle of tourism businesses was also described as an issue since businesses do not forecast challenges beyond a few years and is therefore incompatible with the long-term planning process for climate adaptation (Scott et al., 2012b; Dodds & Butler, 2010; Trawöger, 2014; Moyle et al., 2018). One consultant speculated that “it's difficult to get [businesses] involved...because they focus on short-term profits, not thinking about anything in 50 to 100 years' time. They are so profit-oriented that they don't see a need to do anything in the short-term (L3). Consequently, this short-term outlook results in a negative feedback loop where preference is given to more immediate economic priorities, such as job creation and attracting investment, rather than other long-term issues, such as climate change (Dodds & Butler, 2010). For this reason, Buultjens and colleagues (2018) have criticized tourism development in Sri Lanka for growing in a “haphazard fashion” that has resulted in “many inappropriate developments taking place, particularly in the coastal zone” (p.202). Similarly, another participant explained that the short-term planning cycle in Sri Lanka is also influenced by the war:

It's very difficult to lay out a five-year plan because we also have the history of the war. Even though it's been 9 years since [it ended], we have gotten used to planning only for the next year. I think the challenge is to start getting people to think of the next 10 years, or even the next 8 years. The industry is reactionary so looking long-term is hard. The first thing you need to understand about Sri Lankan businesses is that 12 to 24 months is long-term. That's the level of thinking. So unless they see something happening in the next year, they're not interested. That's the biggest hurdle (H3).

Only one participant appeared to be discontent with the political system, stating that Sri Lanka needs “legislation from the top to bring real change...but [the politicians] are no good. You pay taxes in your country for social services? We pay taxes to line their pockets” (N3).

5.5 Summary of policy review

Maibach, Chadwick, McBride et al. (2008) argued that the activities promoted in planning documents can help address issues such as climate change since decision-makers play a

critical role in guiding the perceptions and values of the public. However, due to lack of attention paid to climate change in the TSP, it is clear that tourism leaders in Sri Lanka have not yet stepped up to this role. The narrow focus of climate change in the TSP is a critical shortcoming considering that tourism is identified as one of the most vulnerable sectors to climate change in Sri Lanka (MMDE, 2016b; CCS & MMDE, 2016). Consequently, the tourism sector lacks goals and measures that support climate change adaptation. Interview participants also described difficulty engaging with the tourism sector on climate change issues, confirming the finding that climate change has not been adequately addressed by the tourism sector in Sri Lanka. According to interview participants, the issue of climate change appears to be distant to the tourism sector due to uncertainty and lack of awareness and sector specific information about climate change impacts, lack of coordination and collaboration within tourism institutions, and the short-term focus of businesses in their planning cycle.

CHAPTER 6

RESULTS II: COMMUNITY ADAPTATION EMBEDDED CASE STUDY

6.1 Introduction

Given that erosion is a significant challenge for coastal tourism (Scott et al., 2012; UNWTO et al., 2008) and that sea level rise is accelerating faster than previously thought due to anthropogenic climate change (Bars et al., 2017; Brown & Caldeira, 2017; Kopp et al., 2017; Jevrejeva et al., 2018; Bakker 2018), this chapter presents a embedded case study to understand how tourism stakeholders perceive impacts consistent with climate change futures in Unawatuna. The first section begins with a discussion about coastal erosion in Sri Lanka followed by an overview of events leading up to beach nourishment, a key potential adaptation strategy, in Unawatuna in March 2015. The second section reports the key findings from the interviews.

6.2 Coastal erosion in Sri Lanka

As previously discussed, coastal erosion is influenced by natural processes, climate change, and anthropogenic factors. In Sri Lanka, accretion and erosion patterns are also affected by monsoon seasonality (Weerakkody, 1997). The SWM generates strong waves that affect longshore currents between May to September and cause beaches in the west and south-west coast to be more narrow due to greater sediment loss (Frykman & Seiron, 2009; Ratnayake et al., 2018a; Thevasiyani & Perera, 2014; Weerakkody, 1997). Although the west and south-west coast experiences slight accretion from the rest of the year, this phenomenon has generally resulted in incremental but continuous coastal erosion (Weerakkody, 1997).

Sand mining and coral extraction (Desprats et al., 2010), formal and informal tourism construction near the beach (Bandara & Ratnayake, 2015), and offshore coastal structures (Becken, 2005; Ratnayake et al., 2018a; Senevirathna et al., 2018) also affect coastal sediment balance. A 5km-long breakwater was constructed to support the ongoing 5.6 million m² Colombo city expansion project, co-developed by the Sri Lankan government and the China Harbour Engineering Company under China's development strategy, the Belt and Road Initiative (Abi-Habib, 2018). The project obtained its Environment Evaluation Certificate in 2011 (Jayawardane, 2015). However, according to Ratnayake et al. (2018a), activities related to this project, including sand dredging, breakwater construction, as well as inadequate coastal monitoring and management strategies, affected five beaches in Wellawatte, Mount Lavinia,

Ratmalana – all located south of the breakwater (Ratnayake et al., 2018a). Based on monitoring results, beach erosion increased significantly from an average of 0.7m per year between 2000 to 2012 (or approximately 8.2m), to 28.2m between 2011 to 2012 (Ratnayake et al., 2018a). As such, both anthropogenic and climate-induced factors, such as accelerated sea level rise, will likely place extreme pressures on coastal systems (Ratnayake et al., 2018a) and threaten sensitive ecosystems and economic sectors in Sri Lanka (Frykman & Seiron, 2009; Wong et al., 2014).

6.2.1 Coastal erosion in Unawatuna Bay

Unawatuna is located between Ambalangoda and the Dondra, a stretch along the southwestern region that was once referred to as the “most endangered coast” to sea level rise (Weerakkody, 1997, p.236). Due to its vulnerability to coastal risks, Unawatuna Bay has been the site of several coastal engineering constructions and coastal protection activities (Thevasiyani & Perera, 2014; Senevirathna et al., 2018; Weerakkody, 1997). In 2012, the CCD constructed a stone-block breakwater to protect Unawatuna beach against coastal erosion (Rathnayake, 2015; Senevirathna et al., 2018). The contributing factors of erosion are unclear due to the lack of scientific studies (Senevirathna et al., 2018), although monsoon seasonality (Weerakkody, 1997) and improper coastal management (Athulathmudali, Balasuriya, & Fernando, 2011; Ratnayake et al., 2018a; Thevasiyani & Perera, 2014) are known to impact sediment balance. By 2013, the erosion of the beach had attracted national media (Table 6.1). As one hotel manager explained in an interview, “we were accustomed to the beach becoming smaller and even disappearing in the monsoon season from May to September, but two seasons ago, it never came back” (Ellis 2014, para. 2).

Table 6.1: Media headlines regarding erosion of Unawatuna beach

Source	Date	Media headline
Derana Videos	Aug 22 2013	Unawatuna residents claim stone barrier causing coastal erosion
Derana Videos	Sept 1 2013	Unawatuna residents protest removal of coastal barrier
YAMU	2014	Unhappy banana
News First LK	Feb 8 2015	Special Report: Breakwater sinking the beauty of world famous Unawatuna beach
Daily FT	Feb 15 2015	Unawatuna Beach: A call for action
The Sunday Times	Mar 1 2015	Are we all waiting until Unawatuna Bay is washed away?

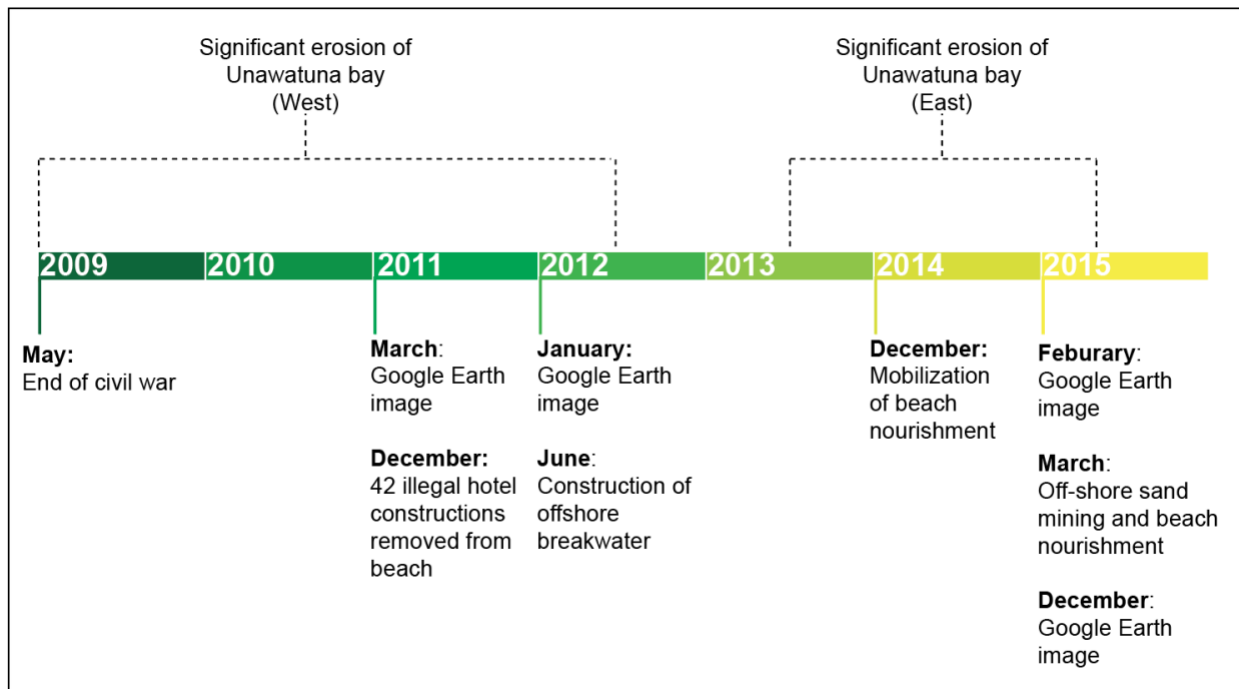
At the time of writing, there is only one known study that has assessed the physical impact of coastal erosion along Unawatuna Bay (Senevirathna et al., 2018). The study determined that

natural and anthropogenic factors, caused by intense storm surges, unauthorized tourism development, and the breakwater construction, led to accelerated erosion (Senevirathna et al. 2018). To this end, Scott (2015) argues that:

Not enough has been written about Unawatuna beach and the fate that has befallen it. The media, the Tourist Board, the Tourist Industry, the agents of conservation and ecology, the oceanographers, and government bodies have kept quiet, shown indifference or given hollow assurances of rectification.

Drawing from peer-reviewed journal articles, news articles, and official government reports, the following section provides an overview of the events leading up to beach nourishment in March 2015 (Figure 6.1). Five Google Earth satellite images during the NEM (December to March) between 2005 to 2015 were used to illustrate the change of the beach over time. No attempt has been made to standardize low and high tide conditions in the following satellite images.

Figure 6.1: Timeline of events in the context of erosion of Unawatuna Bay (2009-2016)



Author's interpretation.

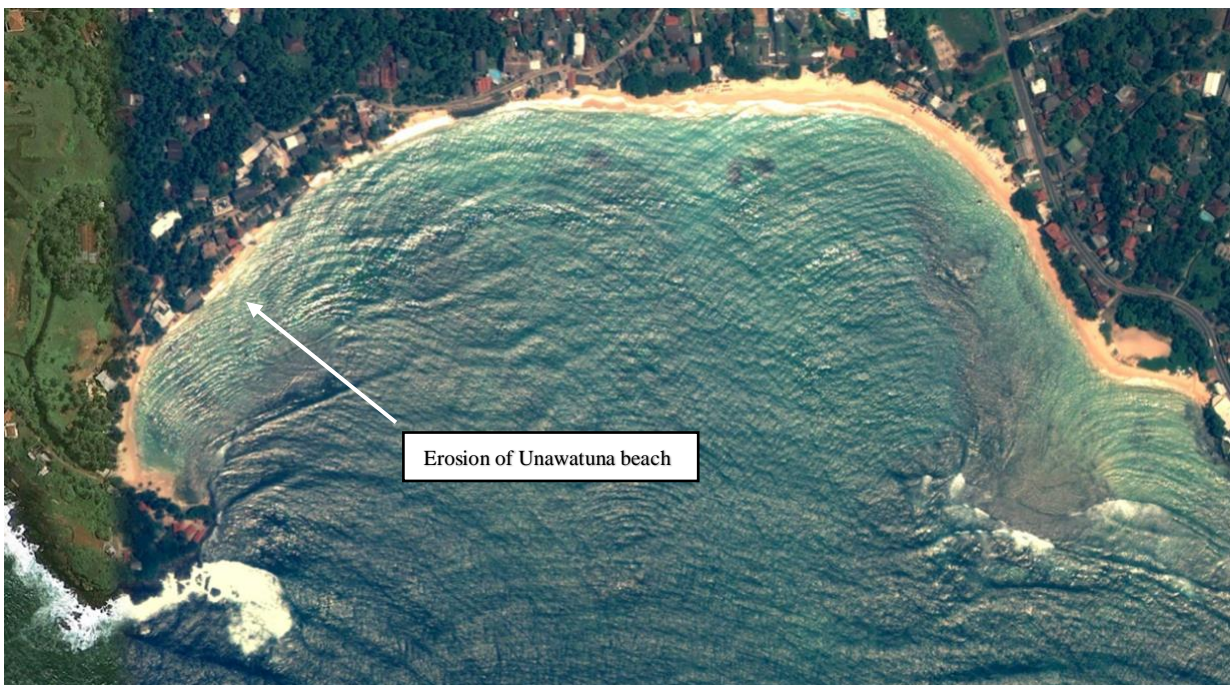
Figure 6.2 (below) shows a Google Earth satellite image of Unawatuna Bay taken on February 4, 2005, approximately one month following the December 2004 tsunami. A strip of sandy beach

can be seen along the coastline. By 2011, the beach on the west had significantly eroded while the rest of the beach was largely unaffected (Figure 6.3).

Figure 6.2: Beach profile of Unawatuna Bay from February 2, 2005



Figure 6.3: Beach profile of Unawatuna Bay from March 24, 2011



According to Senevirathna et al. (2018), the west-end of the bay had reduced by 9326 m² between 2007 to 2011. To address the erosion, the CCD partially removed 42 beachfront properties in December 2011 in order to comply with the *Coast Conservation Act, No. 49 of 2011*. As Section 28.4 of the *Coast Conservation Act* states,

The Director-General shall either upon the serving of an order of demolition in terms of subsection (2) or on the conclusion of any appeal in terms of subsection (3), cause the construction of the unauthorized structure, house, hut, shed or other building to be taken down and removed from the land. The total cost incurred in the taking down of the unauthorized structure, house, hut, shed or other building and the cost incurred in the removal of all materials used in the construction of the unauthorized structure, house, hut, shed or other building shall be recovered from such person as a debt due to the State.

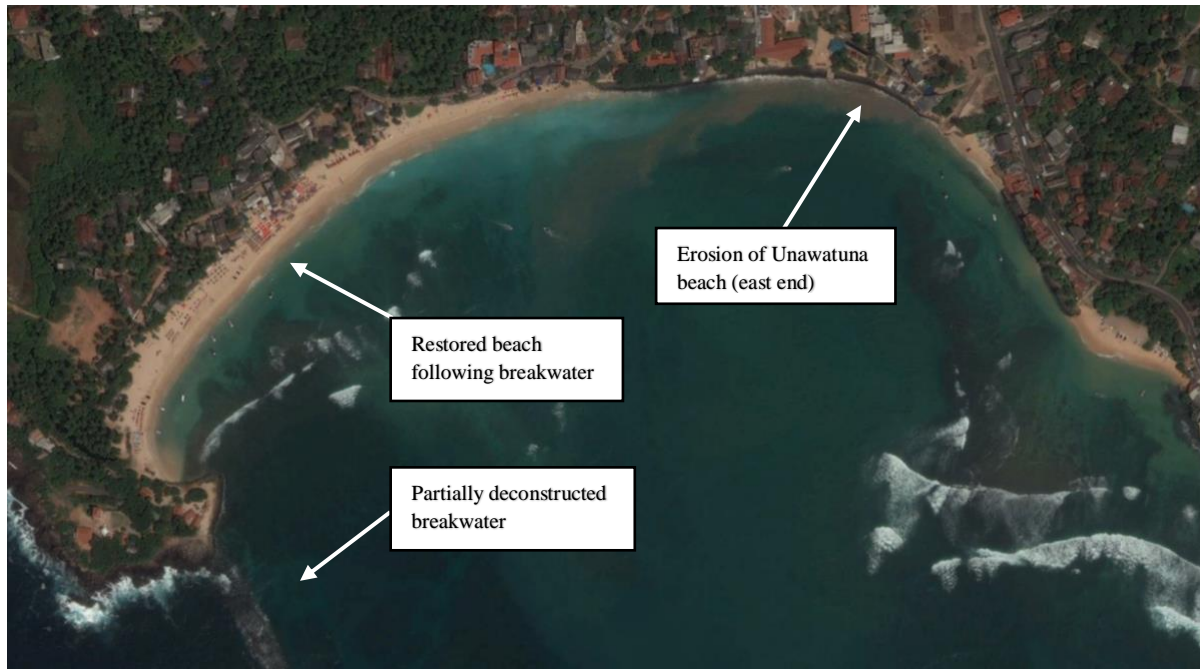
However, the removal of unauthorized coastal structures did not address the issue of coastal erosion and as such, the CCD constructed a 300m-long stone-block breakwater from *Welle Devalaya* in July 2012 (Chamikara, 2015). Figure 6.4 (below) shows a Google Earth image of the Unawatuna Bay that was captured on January 13, 2013, six months after the breakwater was constructed. Some improvements to the west-end of the beach can be seen.

Figure 6.4: Beach profile of Unawatuna from January 13, 2013 following construction of the breakwater



As Figure 6.5 shows, the impact of the breakwater was “obvious within a short period of time” (Prasteya, 2007), with the beach on the east end of the bay facing significant and unexpected erosion in the following months.

Figure 6.5: Beach profile of Unawatuna from February 6, 2015, prior to beach nourishment



According to Senevirathna et al. (2018), the breakwater was ineffective since it “increased the intensity of erosion” in the area (p.1016). The impact of the erosion was noticed by tourists as well. As one tourist wrote on TripAdvisor ([jaynewcastle] 2013), an online review platform with the largest virtual network of tourists (Cantoni & Xiang, 2013):

The change at Unawatuna is just unbelievable since the last time I visited in May 2012. The western side of the beach from just before the Neptune Bay Hotel, all the old buildings have all been cleared away entirely now and there is a huge wide stretch of beach, with the remaining restaurants set back a fair way from the sea. Eastwards however, the beach has just completely gone. Nothing left at all, just large rocks hopefully protecting some of the buildings, & rock cages protecting UBR from further collapse into the sea.

Tourism establishments that were previously unaffected also reported severe impact to their business and, in some cases, property loss or damage (Mahadura, 2013; Samarajiva, 2015).

The CCD's final strategy to restore the bay was through beach nourishment (Figure 6.6 and Figure 6.7). According to the CCD project report (2015), beach nourishment occurred between March 17-22, 2015, totaling LKR 789 million (US\$4.4 million). Approximately 214,073m² of off-shore sand was extracted to expand the coastline by 35-40m in width and 1km in length. The top layer of the breakwater was also partially removed to reduce the erosion of the beach.

Figure 6.6: Beach profile of Unawatuna in December 21, 2015, after beach nourishment



Figure 6.7: Before and after beach nourishment of Unawatuna Bay (East)



Source: CCD (2015)

6.3 Interview results

With the context of Unawatuna in mind, one of the objectives of this thesis is to examine stakeholder perception of climate change and possible adaptation strategies at the destination community scale. To ensure anonymity, participants are identified by a unique study code throughout the study (Table 6.2). A variety of experiences were shared by participants that eluded to their perception of climate change and tourism. Table 6.3 presents the 9 themes that emerged from the interviews that correspond to the four themes used as an interview guide. Each theme is discussed in the sections that follow.

Table 6.2: Participant identification key

Profile 1 - Institutional		Profile 2 – Local tourism stakeholders		Profile 3 – Experts	
C1	General manager of an environmental protection government authority	A2	Tour guide operator	H3	Consultant (climate change and carbon mitigation)
		B2	Scuba diving instructor and manager		
		D2	Hotelier		
E2	Senior official of a national tourism association	E2	Surfing instructor and business owner	L3	Research economist (climate change)
		F2	Trishaw driver		
		G2	Restaurant and guesthouse owner		
J2		J2	Tour agency operator	N3	Consultant (tourism)
		K2	Hotelier		
		M2	Hotelier		

Table 6.3: Summary of interview results

Interview guide	Results - Themes
Background	1. Tourism is an important sector in Unawatuna 2. Awareness of climate change impacts based on personal observations
Climatic conditions affecting tourism	3. Perception of tourism vulnerability to climate change 4. Breakwater, erosion, and artificial beach 5. Low perception of climate change risk
Non-climatic conditions affecting tourism	6. Contending priorities of tourism stakeholders
Future opportunities and challenges	7. Strategies to achieve sustainable tourism 8. Poor regulation and management of tourism activities 9. Political issues

6.3.1 Background

Theme 1 – Importance of the tourism sector in Unawatuna

The importance of tourism in Unawatuna was discussed by all of the participants. One participant explained that residents in Unawatuna were initially apprehensive about the tourism sector, stating that:

Villagers asked me not to [open my surfing business] in the 1980s. They took me to the police too. Locals didn't like women in bikinis and they thought it would be harder to raise their children right (E2).

As some studies have suggested, the more that residents are engaged the tourism sector, the more positively inclined they are towards it (Andereck et al., 2005). Over time, the participant noticed a change in their attitude once the community recognized the business opportunities in the tourism sector, stating that nearly his entire village is supported directly or indirectly by the tourism sector. Four participants also stated that they left their job in the fishing industry to work in tourism while another participant said that he works as a trishaw driver for an additional source of income, catering mostly to tourists visiting Unawatuna and Galle Fort.

Theme 2 – Awareness of climate change impacts based on personal observations

Although climate is taught in Sri Lankan schools and universities, the subject of climate change has not been formally integrated into the education system (MMDE, 2011b). According to Sri Lanka's Second National Communication under the UNFCCC (MMDE, 2011b), "people generally have some idea of climate change and its possible impacts, mainly because of the wide coverage given to news items on such activities disseminated in international news services as well as electronic and print media" (p.129). As such, local tourism stakeholders described their personal observations of climate change impact. For the most part, the changes described were related to rainfall during the monsoon seasons:

Weather patterns are...unpredictable now. There's a lot of [rain]. When it rains, it's pouring (D2).

Most unfortunate is with 4 or 5 hours of rain, there are places [that will] flood. It was not the case earlier....I really can't understand how an island can get flooded" (A2).

When we were children, and during our parents time too, [the monsoon rain] was different. Not like now. The sea used to be very calm in September with good visibility

until April. The season would stop and start around the same time. It's not like that [now]. It's changed in the last four years (B2).

Only one participant commented on coastal erosion in Dewata beach - a small surfing destination located 2.6 km west of Unawatuna Bay. Since the interview was conducted in Dewata, he was able to demonstrate the change:

There is erosion this month – not a specific month, but September is usually the season. Let me show you the back. My house is at the corner. That building you see is my home. I [used to] travel by a three wheeler from there [until] last year but not anymore. [That] side is safe because of the [protection from the bay but this] area gets eroded more. No one believes me that it's happening but I can guarantee that it will be gone in five years (E2).

6.3.2 Climatic conditions affecting tourism sector

Theme 3 – Perception of tourism vulnerability to climate change

Participants were asked to reflect on the impact that climate change had on their business. Seven out of the nine local tourism stakeholders stated that climate change impacts and variability had not affected their business. Only two participants raised concern over climate change impacts with regards to the altered tourism seasonality due to rainfall variability, coastal erosion (discussed in Theme 4), and coral bleaching (discussed in Theme 6). As Shakeela and Becken (2015) point out, people have different cognitive frameworks that influence their ability to interpret information or apply filters and biases, among other factors. While climate change impacts may be perceived as a significant problem for some, in this case rainfall patterns, coastal erosion and reef degradation, others may see it as a minor and insignificant issue (Shakeela & Becken, 2015). The lack of understanding of the climate change and tourism relationship among tourism stakeholders was identified as a barrier to adaptation in other destinations (Scott et al., 2012a), such as Fiji (Becken, 2005).

Local participants only described minor changes to their operating behaviour when it occurred as a result of immediate weather that would impact their business, such as severe rainfall and flooding events. As such, participants did not describe impacts of droughts or cyclones since Unawatuna is located in the south-west wet zone. Increased temperature was also not perceived as a threat since tourists who visit Unawatuna are generally tolerant to thermally stressful conditions but are sensitive to excessive rain (Rutty & Scott, 2010). According to a

hotelier, “tourists want the sun and the beach when they come to Sri Lanka so [it’s] better if it’s hot than cold. Even if it rains, it won’t be for long” (K2). A manager of a large Sri Lankan-owned hotel company stated that:

Every monsoon, we have one property that gets blocked out because of the access to roads. But that’s only one day maximum. It happens everywhere in the world but it doesn’t destroy your business. In a way there is little impact to the business...at the end of the day, it’s just a minor setback (D2).

Similarly, when asked whether or not heavy rainfall would affect the trishaw driver’s business, he responded saying that “the rain is only a problem if it touches the [trishaw’s] engine. It is bad, but after a little bit of time, it is okay” (F2). Only the diving instructor stated that a change in rainfall intensity, temporal and spatial distribution would affect the climate conditions that his diving business relies on:

We don't know the timing of [monsoon rain] anymore. The weather in October should be clean, good, and calm but it [has been] really crazy. Last December there was a big storm [and] our huts and boats capsized on the beach. [These] thing[s] [happen suddenly now]...Our season start[ed] very late. We only got nice weather in January. It should have been in November (B2).

When asked to reflect on the impact of flooding on tourism, only one hotelier recalled that “tourists were upset that [they] did not have beer” (G2) after the Lion Brewery, the producer of Sri Lanka’s highest selling beer, was flooded in 2016 (“Lion brewery after the flood” 2017). According to a news article, unexpected rainfall over two days inundated the brewery with floodwaters that reached up to seven feet (Wettasinghe, 2017). For the first time in 18 years, the brewery was flooded despite brewery’s flood wall and storm drainage system (Wettasinghe, 2017). Within six months, the company dropped 57% in beer sales and had a Rs.613 million profit loss by the end of 2016 (Echelon, 2017). However, the hotelier explained that the flooding only caused a minor disruption to the tourism businesses since they had to switch to selling imported beer. As such, similar to how tourism managers perceived the risk of cyclones in Fiji as a “natural part of running a tourism business” (Becken, 2005, p.385), participants did not appear to be concerned about rainfall and flood risks.

Theme 4 –Breakwater, erosion, artificial beach

All of the participants recalled the breakwater construction and beach replenishment project in Unawatuna although the phrase ‘coastal erosion’ was not always used to describe the phenomenon that occurred. Instead, some participants referred to it as “the beach going rapidly” (B2), “the beach being eaten by the ocean” (F2), “there was no beach for a long time” (G2), “the water [coming] close to the houses” and “the sea taking the land” (E2).

Similar to the findings of Senevirathna et al. (2018), all of the participants agreed that the breakwater had negatively affected Unawatuna beach. As one participant explained, “we had a good surf point before but the breakwater moved everything that was natural. Now we lost it” (E2). A consultant explained that the erosion was a consequence of the breakwater, describing Unawatuna as:

One of the key beaches in Sri Lanka for many years [until] they decided to build a spur in the ocean and everything just washed away. All of the erosion happened because of the breakwater. If they didn’t put the breakwater in, there would be nothing happening. It would have recovered eventually (H3).

For the most part, participants perceived the beach nourishment project to be effective since it revitalized the tourism sector in Unawatuna, although some participants claimed that the beach was not as attractive as it was before. For example, one participant expressed that the new beach was big but “the sand is ugly. People used to call it golden sand. [The sand] was very comfortable...but very few remain here now [Unawatuna] is not the paradise I knew before” (G2). However, despite acknowledging the impact of coastal erosion on the tourism and recreation activities in Unawatuna, the risk of future erosion was not mentioned as a concern for most stakeholders. Only the surfing instructor expressed concern that future erosion would affect his business in Dewata:

The maximum I can give [Dewata] is five years. It's disappearing [fast] and we have to stop it. I have even notified the coastal conservation board. They are saying that they need a lot of money. They need to put sand like in Unawatuna. Can you remember Unawatuna before? [That was] a big project so they don't put effort to it [here]” (E2).

The participant also noted that low public awareness was also a factor causing inertia:

Unawatuna people make their livelihood by facing the sea so they saw the [erosion]. But Dewata people make their livelihood facing the road. They don’t see what’s happening in

the sea because they're not looking at [it]. I was the first to start business on the beach but we can't do a business if there is no beach. I told the villagers about this because the land behind their shop is getting eroded. But they don't get the feeling (E2).

Generally, businesses along the coastline in Dewata face towards Matara Road and provide services to the local community (e.g., mechanics, antique shops, recycling centres, and markets). As such, the majority of businesses in Dewata are not dependent on tourism and generally do not rely on coastal assets, such as coral reefs or the beach, for their operations (with the exception of the fishermen). On the other hand, Unawatuna is a popular tourist destination (MoT, 2016) with a local community that is highly dependent on the tourism sector (Gössling, 2000). As such, the majority of the businesses are tourism-related and are concentrated close to the sea (Figure 6.9).

Soft engineering techniques, such as beach nourishment and artificial reefs, are used as an alternative to hard engineering structures (e.g., seawalls, breakwaters, dikes) in near-shore areas, and often for the benefit of the tourism industry (Philips, 2018; Scott & Verkoeyen, 2018). Destinations that implement beach nourishment will likely see a relative decrease in their vulnerability and increase in their competitiveness compared to competing destinations in the region (Scott & Verkoeyen, 2018). Considering that previously renourished beaches are facing rapid erosion again (e.g., Uswetakeiyawa Beach, see Azoor et al., 2015 and Ratnayake et al., 2018b), and that beach loss is becoming a growing phenomenon across Sri Lanka's coastline (Bakker, 2018), government leaders must understand areas that are potentially the most vulnerable to coastal erosion and employ new strategies to finance adaptation. However, developing countries and SIDS generally do not have the fiscal capacity or flexibility to finance coastal climate change adaptation strategies (UNDP, 2015) and consequently, destinations in these areas may lose become less competitive in the absence of beach nourishment (Scott & Verkoeyen, 2018). Government leaders in these developing countries and SIDS may consider implementing a beach nourishment levy in order to finance such climate adaptation strategies. Recall that the average accommodation occupancy rate in Sri Lanka between 2011 to 2017 is 74% (SLTDA, 2017a). Given that there are 296 accommodation units in Unawatuna (in 24 properties including guesthouses, villas, and hotels) with beach access, or are located within less than 30m from the beach, a levy of \$5.50 per room per night would be required to pay for a similar beach nourishment project (US\$4.4 million) in ten years. Alternatively, it could cost \$11

or \$3.70, per room per night, over a five and fifteen year period respectively, depending on the need for beach nourishment.

Figure 6.8: Unawatuna beach from the west-end of the bay



Source: Tam (2018)

Theme 5 – Low perception of climate change risk

Overall, tourism stakeholders did not consider climate change to be a threat to tourism in Unawatuna. As one consultant suggested, the service providers' low risk perception may be due to a lack of understanding about the tourism-climate change relationship:

You'll probably find that selling the concept that climate change will attribute to the degradation of the tourism industry is not well received here. In reality, most of the tourism industry on the coastline don't see a huge impact on climate change. If you ask them, most of them go "Ah that's not true" because they don't see it for themselves. [They only need] the sun, the beach and the sand, so as long as that's there, they think they have what they need (H3).

The diving and surfing instructors also suggested that some tourism stakeholders may be disconnected from the coastal environment:

The thing is they don't have the feelings in their bones [so they] don't know the value of [the beach]. Give Sri Lankans a gem and they will put it in a locker. [The beach] is also a gem...they should keep this clean and safe. But our people don't value [it] (E2).

I think maybe one reason for our locals is that we don't know the value of [the coral reefs]. We don't know we should protect these things (B2).

Other participants speculated that it would be difficult to enforce effective climate action in Sri Lanka due to national issues such as debt and poverty. To describe the low perception of climate change risk among residents in Unawatuna, one participant analogized, “Why should people worry about food in five years if they can’t even feed their family today?” (D2). Another participant stated it would be “too difficult for [stakeholders] to even consider climate change and sustainability with the amount of national debt” (M2). Sri Lanka has incurred an extensive amount of public debt, including a US\$1.5 billion three-year loan by the IMF in mid-2016 with the debt repayment cycle beginning in 2019 (Aneez, 2018b). By the end of 2018, the government was set to repay a debt amount estimated to be LKR 1.97 trillion (equivalent to US\$12.85 billion), with an additional US\$8.26 billion in foreign loans and interest (Aneez, 2018b). Participants also addressed several other challenges that required the public and private sector attention in Unawatuna “before [the industry can] meet with climate change and sustainability” (A2). As a hotelier explained, “climate change is not a priority [because] we have many of our own problems to solve first” (M2).

6.3.3 Non-climatic conditions affecting tourism sector

Theme 6 – Contending priorities of tourism stakeholders

Local tourism stakeholders described other non-climatic conditions that they considered to be priorities for their businesses and the tourism sector. Four main priorities were identified by participants relating to:

1. Managing daily tourism operations
2. Finding, training, and retaining skilled staff
3. Improper waste management system
4. Reef degradation

Challenges related to daily operations and business management were frequently discussed by local tourism stakeholders. One hotelier spoke about the difficulty of managing tourism expectations and experiences, stating that:

[In Unawatuna], we have all types of tourists...at night it becomes a[n issue if] tourists come looking for [drugs and alcohol] because they want to have a good time on holiday. Sometimes we get a bad reputation for this because not everyone likes it (G2).

Similarly, another hotelier explained that they had to manage the nightlife in Unawatuna since “people like parties but [sometimes] it disturbs the guests. Especially older guests who come to

stay for 10 days here...then after the big party, [the guests] get very angry and check out” (K2). Although sexual harassment was not a challenge for most participants, one hotelier insisted that “if one woman gets harassed on the beach, it becomes our problem” (B2).

With regards to human capital, all of the participants with experience in the tourism sector stated that training and retaining qualified staff to meet tourism demands was a priority for the industry. As one hotelier highlighted, the problem is not with “quantity; it’s with quality” (H3). Another participant explained that the tourism industry offers many employment opportunities, but the problem is that “everyone wants to jump in without understanding staff shortages and supply qualities You need to have quality standards [and] you need to understand the whole value chain. No one is looking into how to do their tourism business properly because they are running after money” (I1). When asked to describe the challenges facing the tourism industry in Unawatuna, a participant simply said “staffing and environmental challenges. Everything is very difficult to push in this country” (B2).

The waste management system in Unawatuna was also described as a challenge in Unawatuna. One participant stated that the CCD needed to “take care of [the] waste but they don’t. Rivers flow through the villages and brings...garbage too” (B2). On the other hand, the representative of an environmental protection government authority raised the issue of waste management, explaining that:

Tourism [is] booming down in Unawatuna and pollution is a huge problem. We need short-term action, awareness, and regulation. Regulate it because it’s growing without any control... We try our best to control pollution in tourist areas and we always invite SLTDA to come work with us. But they never appear. They say it’s our duty. Yes it’s our duty, but we should work together, right? I’m really disappointed about their work” (C1).

Without an effective waste management system, much of the waste generated by tourism businesses is diverted into the ocean through the Welle Devalaya - Yakdehimulla channel or deposited on the beach (Rathnayake, 2015; Senevirathna et al., 2018).

According to the diving instructor, human activities, such as dive boat anchors, coral mining, spearfishing, and waste-water pollution, were the primary causes of reef degradation. To illustrate the impact of dive boats, he stated:

In high season, there are 20 boats that bring tourists out [to dive and snorkel] two to three times a day. [Each time they go], they drop an anchor. So imagine, [in] one day, we drop the anchor 50 times so the coral has no chance to grow (B2).

The participant also acknowledged that “coral damage in the shallow reef is [also caused by] the tsunami, global warming, and coral bleaching” (B2) although did not consider climate change to be the primary cause of the damage. This finding is consistent with Becken’s (2005) study in Fiji that found that although most tourism managers and public-sector stakeholders expressed concern about the condition of coral reefs, climate change and increasing sea surface temperatures were not perceived to be the primary cause of damage. When asked how the tourists reacted to the coral bleaching, the instructor explained:

Beginner divers are okay because they only want the diving experience. But they will not see soft coral here anymore. People have to go 20-50m deep to see fish and soft coral. We used to have [coral] around seven to eight metres deep in Unawatuna...but now, all the fish are gone and the coral is dead (B2).

The diving instructor also explained that tourists’ sensitivity to coral bleaching depended on their diving certification, stating that “[experienced] divers who come to Unawatuna and are not happy when they see [unhealthy coral]. They don’t have much to see now” (B2). However, the participant pointed out that their company offered trips to 16 dive sites to allow experienced divers to explore coral reefs and shipwrecks in deeper water.

6.3.4 Strategies and challenges

Considering that local tourism stakeholders did not perceive climate change as a threat to tourism, participants were asked to identify opportunities that would support sustainable tourism instead. This section also discusses the challenges that were identified by interview participants with regards to integrating sustainability and climate change into the tourism sector in Unawatuna.

Theme 7 – Strategies to achieve sustainable tourism

Although not all of the participants offered strategies to achieve sustainable tourism, those who did identified three possible strategies in order to achieve sustainable tourism through a) marketing and promotion, b) pressure and incentives from policy, and c) raising awareness. According to the TSP (2016), sustainability is a priority for the tourism sector. As such,

participants recognized that “the tourism sector needs to come together and work to promote Sri Lanka as a premier tourism segment” (I1). Another participant stated:

We have a great opportunity to...market ourselves as an ethnical sustainable destination. We have the beach, we have the animals, we have the forest. But we are at a crossroads so it's time to take stock of where we are going and where we have gone post-war. We have to look at how we want to develop this place sustainably and then package it out to tourists” (J2).

Participants also suggested that the government should encourage behaviour through policies that reduce negative impacts of tourism and encourage better business practices.

Proponents of pressure from policy explained that “Sri Lankans are afraid of the laws. If there are laws on the beach, they will listen” (A2). Similarly, another participant said:

“[People] are scared of fines. I remember people [used to] dump garbage on the road last year and then there was a garbage problem for the government. The government enacted a law to fine people Rs.1000 if there was garbage in front of [their house]. Not a week went on and the town was clean. So I believe they will behave if they are fined. (E2).

Four participants suggested that the government should incentive waste management and low-carbon business practices among hoteliers. For example, one participant optimistically stated:

Sustainability will come with a little help from the government by way of incentives.

We've already seen it with electric cars...It's a tall order but you have a duty concession for it. If they do it properly with tourism, I think it will come” (M2).

Less optimistically, another participant expressed that “there should be an incentive system but has [the government] done it? No. Will they do it? No” (K2).

Both the diving and the surfing instructors highlighted the need to conduct awareness programmes to help tourism stakeholders understand the impact of climate change impacts.

When asked what he would do to address the erosion in Dewata, the surfing instructor stated that “if there were a way to make people aware of what's happening here, then it would be a great deed, to educate people little by little with the help of a minister. I'm educating people...because I believe that these people will come through” (E2). A similar statement was made by the diving instructor regarding strategies for coastal and marine management. The participant worked on

artificial reef structures and led awareness workshop in the Maldives. When asked if he would work on similar projects in Sri Lanka, the participant stated that:

Maybe people in Colombo don't know about the problems we are facing here. Maybe people making policies don't know...I think it [would be] good if everybody [in the same industry] collaborates together in Unawatuna - like the glass bottom boats, the dive centres, the jet ski people – and explain to them the value of [conservation]. We can accomplish great things, talk about ideas, and put money together for anchor lines so we don't destroy the coral (B2).

However, in both interviews, it was clear that the businesses competition was a significant barrier:

Surf shops [in Dewata] have a business mindset and only want money. Besides that, nobody is standing to protect the beach or stopping people from ruining it. It's the biggest loss for us. I can't do this alone. I want other people to rally as well....they will come to senses when the water comes to their backyard. It might be too late. But I'm in the mindset of even a second is enough (E2).

According to the diving instructor, collaboration is not possible because “[some businesses] do not have a good relationship with others” (B2). One cause for the poor business relationship may have been gang violence. In addition to these barriers, participants also identified other macro-level challenges that could constrain tourism, particularly poor regulation and management of tourism activities (Theme 8) and political issues (Theme 9).

Theme 8 – Poor regulation and management of tourism activities

According to the TSP, tourism planning, regulation, and destination and asset management have been complicated and slow in Sri Lanka (MoT, 2016). All of the participants agreed that the government has the responsibility to plan and manage destination growth in order to protect Sri Lanka's natural, historical, environmental, and cultural assets. However, as participants participant pointed out:

Tourism is not doing their job well. We have a big plan to convert Sri Lanka into a [tourism] hub...but there is no control. There [are] no street lights, roads are polluted, and roads are not in good condition. There are no standards” (J2).

We don't have any plan to regulate the tourism here. Regulate in the sense with the room sizes, how to treat tourists, how to facilitate them, how to serve them in restaurants, restaurant qualities, everything. The behaviors of tuk-tuk people and the street walkers, beach walkers and water sports, diving. Nothing is regulated (N3).

Right now, [tourism] is just a post box for ideas and money. Anyone can go ahead with a project if they have the right amount of money. It's high time now to see the carrying capacity of different places, in Galle, Yala, and the entire country. They should not allow people to keep building in Yala, even if they are bringing in thousands of dollars. SLTDA should be a proper development agency to direct [tourism] and not just take the easy way" (K2).

Yala National Park is known as the best destination in Asia to see to see wild Asian Elephants (see Figure 3.2 for location, Calgareo & Cochrane, 2009). However, a recent study found that 75% of visitors to Yala National Park were unsatisfied about their experience due to poor park management, heavy traffic congestion inside the park, and reckless driving by safari Jeep drivers (Prakash, Perera, Newsome et al., 2018).

Theme 9 – “Higher political issues”

Tourism stakeholders also shared similar opinions as institutional leaders and consultants (presented in Chapter 5) with regards to Sri Lanka's political environment. When asked how tourism development can be better supported at the community level, one participant stated that “I think things will never change with as long as there's dirty politics in Sri Lanka” (E2). The issue of corruption was a related theme that emerged from the interviews. For this study, corruption is conceptualized as “the abuse of public office for private gain” (Rahman, 2018, p.315). Corruption was also described in the TSP as “political interference [that has] hindered overall output of government agencies and progress on key growth initiatives” (MoT, 2016, p.14). One participant explained that construction laws are strictly enforced for local businesses but are laissez-faire for others. To illustrate this, the participant described the construction of a private hotel in Unawatuna:

Our President's elder brother bought a big property...and is building the biggest hotel in Unawatuna. Other people can't [build] more than three stories [but] his property already has nine. This is destroying our natural beauty for one person's fortune (B2).

Allegations about construction and environmental regulation breaches were also found in a news article (“Dudley Sirisena’s hotel destroys Unawatuna”, 2018). According to the report, the law prohibits the construction of any building above 15 m in height if the width of the access point is below 12m (“Dudley Sirisena’s hotel destroys Unawatuna”, 2018). The access point of the new hotel is 3.05 m wide. Furthermore, the article mentions that Unawatuna residents have complained about water and electricity shortages, as well as the lack of waste management and disposal method, as a result of hotel construction.

CHAPTER 7

DISCUSSION & CONCLUSION

7.1 Introduction

The overarching research question this study sought to examine was “Is the Sri Lankan tourism sector prepared for climate change?”. This research was guided by four objectives that were examined through the scope of a national policy review of tourism and climate change policy instruments and an embedded case study of Unawatuna. The findings from the policy review and embedded case study interviews suggest that Sri Lanka’s tourism sector is currently not prepared for climate change. However, the sector is identified as a priority for climate change adaptation, which is an important precursor to advancing adaptation. The first section discusses the main findings and implications as it relates to the four research objectives. Recommendations for future research are also provided.

7.2 Main findings

7.2.1 Objective 1

Establish the state of knowledge of climate change risks and impacts facing the tourism sector in Sri Lanka

Destinations along the south and south-west coasts are the most popular tourism hubs, offering accommodations, attractions, and services catered to the coastal tourism market segment (MoT, 2016). Consequently, the concentration of tourism businesses in coastal areas, as well as its dependency on natural resources, makes the coastal tourism market segment highly vulnerable to climate change (Wong et al., 2014). The literature review revealed that the tourism sector in Sri Lanka is vulnerable to several climate change impacts, including temperature, rainfall, flooding, drought, landslide, sea level rise, coastal erosion, coral bleaching, and international mitigation policy. A summary of potential impacts is provided below in Table 7.1. These impacts are also influenced by regional processes, including El Niño and La Niña. It should be pointed out that research about the vulnerability of fisheries and agriculture sectors to climate change has been more substantial than the tourism sector (Athulathmudali et al., 2011; Esham & Garforth, 2013; Menike & Arachchi, 2016), suggesting a stronger understanding of climate change impacts in natural resource sectors in Sri Lanka. This is consistent with broader literature that suggests that climate change research and adaptation in the tourism sector is not as

developed or prioritized compared to other sectors despite its economic importance (KPMG, 2008; Scott et al., 2012a) and that research on the services sector as a whole is not as well developed (IPCC 2014a). However, considering that tourism has been earmarked as a sector of high growth potential in Sri Lanka (MoT, 2016), and that more people are shifting from agriculture and fisheries to the tourism sector for employment (Athulathmudali et al., 2011), it is important that potential climate change impacts are recognized by the tourism sector.

Table 7.1: Summary of potential climate change impacts on the tourism sector in Sri Lanka

Climate change drivers & impacts	Impact on tourism in Sri Lanka
Temperature	<ul style="list-style-type: none"> • Average monthly temperature will increase by 3.13°C (to 29.8°C) by 2050 and 4.7°C (to 31.5°C) by 2100. • Temperature increases fall within the ideal range for beach tourism, as identified by Rutty and Scott (2013). • Increasing temperature will unlikely have an adverse impact on tourists since beach users have a higher tolerance for thermal stress (Rutty & Scott 2016). • Temperature rise may lead to higher energy demand and costs for space cooling (Scott et al. 2012a).
Rainfall	<ul style="list-style-type: none"> • Increase in the frequency and intensity of rainfall events during SWM (Hijioka et al., 2014; MMDE, 2011a) with most of the rainfall concentrated in the wet zone (Bultjens et al., 2018). • High wind and rain are not favourable conditions for the coastal tourism segment (Rutty & Scott, 2013, 2016).
Floods, landslides, and droughts	<ul style="list-style-type: none"> • Issues related to water scarcity in the dry zone and water contamination in the wet zone may become more commonplace (DMC, 2012). • Destinations in the south and south-west region will face high flood risk due to more intense and short duration rainfall. Galle and Colombo will continue to be highly vulnerable to inland flooding caused by seasonal rainfall and coastal flooding caused by storm surges (Chandrasekara et al., 2018). • Increased frequency and intensity of flooding and landslides would result in more tourism-infrastructure damage, motorway flooding, and cases of vector-borne diseases, especially dengue, in flood-prone areas.
Sea level rise	<ul style="list-style-type: none"> • One study estimated that sea level rise for 2025, 2050, and 2100 in the south-western coastal region “were 1.14m, 1.31m, and 1.73m above Mean Sea Level [1961-1999]” respectively” (Gunasekara et al., 2009 p.1). • Land, settlements, and coastal infrastructure, including houses, roads, and tourism establishments, will be most affected (MMDE, 2011a), with the greatest impact along the West, Southwest, and South coast (World Bank 2012).
Coastal erosion	<ul style="list-style-type: none"> • Coastal erosion has accelerated due to upstream anthropogenic activities and poorly planned coastal infrastructure development (DMC, 2012). • Future beach loss will be a common phenomenon across Sri Lanka due to accelerated sea level rise and more intense storm surges (Bakker, 2018).

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- Coastal tourism is highly vulnerable to coastal climate risks considering that 25% of Sri Lanka's population resides in coastal areas (Ahmed & Suphachalasai, 2014) and that three out of five households depend on tourism for their livelihood in the southern belt (MoT, 2016).
 - At the time of writing, there are 296 accommodation units in Unawatuna that are located within 30m of the shoreline or have direct access to the beach. If these accommodation properties were to implement a beach nourishment levy, it would cost \$5.50 per room per night over ten years to finance a similar beach nourishment project in Unawatuna.
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Coral bleaching

- Rising ocean temperature and ocean acidification have already threatened coral health and will continue to do so under future warming scenarios.
 - Under a business-as-usual scenario, Sri Lanka will experience annual severe bleaching conditions by 2050 (UNEP, 2017). Compared to other countries in the region, Sri Lanka will be the last country to experience annual severe bleaching, which may be a motivator for current coastal management officials to preserve coral reefs to gain competitive advantage.
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International mitigation policy

- As the industry becomes more conscious of its carbon footprint, particularly through air travel, carbon pricing will likely have a larger impact on the tourism sector in the foreseeable future.
 - Considering that 98.1% of visitor arrivals to Sri Lanka are by air travel, and that Europe is one of the country's top source markets, government leaders should prepare for eventual carbon pricing in the tourism sector (Scott & Gössling, 2018).
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7.2.2 Objective 2

Review the national policy coherence between national tourism strategies and climate change communications and adaptation plan to understand how the sector is preparing for climate change

According to Maibach and colleagues (2008), policymakers help guide public perceptions and values by promoting activities through planning documents that address national issues such as climate change. Therefore, a findings from a policy review may provide insight as to why some policies have difficulty translating into practice (Schipper, 2016). The climate change-tourism relationship in Sri Lanka appears to be well established in the national climate change communications and plans under the UNFCCC, considering that the tourism and recreation sector has been identified as one of the most vulnerable sectors to climate change in Sri Lanka (CCS & MMDE, 2016; MMDE, 2016b). As such, the Ministry of Environment has also proposed a list of priority adaptation actions for all vulnerable sectors, including the tourism and recreation sector, within the NAP.

However, the policy review revealed that the Ministry of Tourism has yet to formally identify climate change risks to the sector. The TSP simply identified climate change as a global issue with no elaboration on its implications for tourism in Sri Lanka or need for adaptation. This was a key finding considering that the Ministry of Tourism intends to develop the coastal tourism market segment in emerging destinations that could be potentially highly sensitive to coastal risks, including sea level rise, storm surges, inundation, and coastal erosion. The tourism sector's failure to recognize potential coastal risks is expected to exacerbate tourism's future vulnerability (Scott et al., 2012c, McCubbin et al., 2015; Shakeela & Becken, 2015).

Despite the tourism discourse remaining rooted in economic growth, there is greater recognition of the concept of sustainable tourism in the TSP from previous tourism planning documents (Buultjens et al. 2018). Strategic interventions for sustainable tourism include building niche tourism markets through the TTPs, conserving, preserving, and managing natural and cultural assets for tourism, and engaging local communities in employment (MoT, 2016). This suggests that the tourism sector has an implicit approach to climate adaptation since some strategies in the TSP are relevant to climate change (Klint et al., 2012). However, as Shakeela and Becken (2015) warn, the lack of explicit adaptation strategies in the tourism plans reveal the government's inertia to sufficiently address climate change and, in doing so, "[spreads] the

message that no major problem exists” (p.76). The sectoral adaptation plan for tourism proposed in the NAP provides an opportunity for industry leaders and businesses to increase the resilience of tourism to climate change risks.

It is not possible to make conclusions about the low prioritization of climate change in tourism planning due to the absence of government involvement in this study. Interviews with institutional leaders and experts provided insight from personal experience about the difficulty of engaging with the tourism sector on climate change issues, describing what some critics have called a “superficial commitment” to climate change and sustainable tourism. This is consistent with the experience in other nations (Shakeela & Becken, 2015, p.68; Weaver, 2011). Participants identified issues related to the uncertainty about climate science, lack of awareness about the relationship between tourism and climate change, lack of coordination and collaboration, and the short-term business planning cycle, which are consistent with barriers identified in the sector in other nations (see Scott et al., 2012b for a review). Interestingly, other climate change studies in Sri Lanka also reported low participation from tourism ministries and government representatives (Athulathmudali et al., 2011; CCS & MMDE, 2016; Landström, 2006; Senaratne, et al. 2009). For instance, Athulathmudali et al. (2011) presented three case studies that explored coastal adaptation in the agriculture, fisheries, and tourism sectors but noted that “it was not possible to get [key informant] interviews from the policy and sectoral level” from the tourism sector (p.23). Landström (2006) also recorded difficulties interviewing regional and local government authorities as a foreign researcher in southern Sri Lanka due to language and cultural barriers. However, the biggest barrier to reaching this group of interviewees was due to their “lack of time or lack of knowledge regarding the issues [since] they claimed they had very little knowledge of the project” (Landström, 2006, p.44).

7.2.3 Objective 3

Examine stakeholder perception of climate change and possible adaptation strategies at the destination community scale

Unawatuna was selected as the embedded case study site since it is an area that has already experienced erosion that is consistent with what is expected to accelerate with climate change. The embedded case study presented here documented a series of actions that were carried out by the CCD to address coastal erosion. The construction of a 300m-long stone-block breakwater in 2013 was criticized for being maladaptive since it caused unprecedented erosion

along the east-end of Unawatuna Bay (Chamikara, 2015; Ratnayake, 2015) and devalued the quality and state of the beach for tourism and recreation (Senevirathna et al., 2018).

Although all interview participants were aware of some climate change impacts occurring in Sri Lanka, the interviews revealed that the majority of participants did not perceive it to be potential issue that could affect their business or the tourism sector. Similar to the conclusion made by Trawöger (2014) in Austria, most stakeholders "[did] not perceive climate change as a real threat, in many cases not even as a risk to their businesses or regions" (p.347). However, where participants relied on the coastal system and marine ecosystem for their core business (e.g., surfing, diving, snorkeling), their attitudes and behaviours towards climate change differed from other participants (e.g., hoteliers and restaurateurs). Areas of concern among the former group of participants included coastal erosion, coral bleaching, and unpredictability of rainfall that would affect the seasonal availability of, conditions for, diving, surfing, and snorkeling. As Hall (2006) points out, this finding suggests a potential difference in perception towards climate change impacts between different types of businesses, particularly between participants who are dependent on natural resources for their core business activities and those who are not. Although the number of participants in this study is not large enough to conduct a statistical analysis, Shakeela and Becken (2015) also found that risk perception of climate change is amplified through personal experience.

The overall low risk perception of climate change is somewhat a surprising finding considering the magnitude of coastal erosion that occurred in Unawatuna Bay. This study found that while participants were aware of the impact that erosion had on the beach quality in Unawatuna, erosion was not seen as a future risk threatening the local tourism industry. As such, coastal erosion was perceived as a coastal phenomenon rather than a climate change issue – a perception that is likely shaped by a low understanding of the climate change and tourism interface (Becken, 2005). Similar to other studies in Austria (Trawöger, 2014), Finland (Saarinen & Tervo, 2006), Switzerland (Matasci et al., 2014), Fiji (Becken, 2005), the low risk perception among tourism stakeholders ultimately restricts adaptation within the tourism sector in Sri Lanka.

7.2.4 Objective 4

Identify barriers to climate adaptation at the destination community scale and provide recommendations for enhancing policy coherence to mainstream climate adaptation

Findings from the policy review and interviews paint a picture of how climate change is seen as a disconnected issue from the tourism sector in Sri Lanka. As the literature review suggested, policy integration is a necessary response to climate change that must be facilitated by government leadership and policy action (Biesbroek, Klostermann, Termeer & Kabat, 2013; Ahmad, 2009; Giddens, 2009) as well as an understanding of the phenomenon (in this case climate change) and support for strategic plans at the community level (Vignolia et al., 2012; Worker, 2017). In light of Objective 4, three barriers to climate adaptation were identified through policy review and interviews (see Table 7.2), specifically with regards to how climate change is understood and managed (Matasci et al., 2014). These barriers only account for a fraction of the barriers to climate adaptation (as outlined by Moser & Ekstrom, 2010; Matasci et al., 2014) but should be addressed in the early phases of the adaptation process to facilitate effective planning and implementation (Matasci et al., 2014). The following section discusses each barrier in depth and identifies recommendations to facilitate policy coherence.

Table 7.2: Barriers to climate adaptation in the tourism sector in Sri Lanka

Barriers	National policy review	Embedded case study
Uncertainty over future climate change projections in Sri Lanka	Indicates an information gap	Suggests an information gap
Perception of climate change as a spatially and temporally distant issue	Provides supporting secondary information	Suggests lack of awareness about climate change impacts among tourism stakeholders
Poor institutional coordination and governance processes	Indicate a need for mainstreaming and greater policy coherence	Indicate a need for stronger leadership

7.2.4.1 Barrier 1: Uncertainty over future climate change projections in Sri Lanka

As Scott and Lemieux (2010) contend, “it is almost impossible to develop an effective climate change adaptation strategy without knowledge of past climate and how this baseline is projected to change in the future” (p.170). The policy review indicated that the current availability of climate information and projected climate change impacts in Sri Lanka is limited and does not support the implementation of effective strategies to respond to climate risks in the tourism sector (Athuluathmudali et al., 2011; Bakker, 2018; De Costa & Dassanayake, 2016). This uncertainty also extends into the area of adaptation, particularly with regards to how tourism stakeholders should manage climate change risks and harness opportunities (CCS &

MMDE, 2016; MMDE, 2016b; Moyles et al., 2018). Interviews with institutional leaders and experts indicated that stakeholders have a lack of understanding about climate impacts on tourism, stating that “the issue in Sri Lanka is...there's no solid proof and no evidence [for climate change]” (N3) and that “[stakeholders] don’t know [the extent of] climate change impacts and the way it would affect the tourism industry” (L3). As Becken (2005) notes, the lack of data to assess the situation hinders the ability to assess the vulnerability of tourism – which, in part, explains the low risk perception among tourism stakeholders in Unawatuna.

Recommendation 1: Conduct research studies to improve understanding of sector relevant climate change impacts in Sri Lanka

Climate change adaptation is fundamentally an information-driven process (Senaratne et al., 2009) that requires an understanding of climate change risk and vulnerability facing human-environment systems. Improvements to climate change information in Sri Lanka will address the need for a more comprehensive understanding about the tourism and climate change relationship which, at the moment, is considered to be ‘extremely poor’ in Asia (Scott et al. 2015; Hall, 2018). While significant uncertainties and gaps in coastline recession projections for Sri Lanka exist, studies are beginning to apply different climate models (Bakker, 2018; De Costa & Dassanayake, 2016) to provide insights into economically optimal coastal setbacks in coastal districts (Dastgheib et al., 2018a) and the bio-geophysical and socio-economic impacts of sea level rise in coastal areas (Frykman & Seiron, 2009). Emerging studies such as these attest to the fact that there are valid data sets and models to work with, despite operating in a “location where data is sparse or not available” (De Costa & Dassanayake, 2016, p.248). The opportunity for tourism stakeholders is to identify climate change impacts in the early phases of the adaptation process and to assess the associated physical risks to tourism and infrastructure, business and regulatory risks, and market risks (Scott et al., 2012a) within the broader cultural, political, economic, environmental, and development contexts (Smit & Wandel, 2006).

7.2.4.2 Barrier 2: Perception of climate change as a spatially and temporally distant issue

While the CCS and Ministry of Environment appear to be aware of the tourism sector’s vulnerability to climate change, this awareness has not been reciprocated by the tourism sector and is therefore an important barrier to adaptation. Similar to other studies (Becken, 2005; Hall,

2006; Matasci et al., 2014; McCubbin et al., 2015; Trawöger, 2014), this study found that climate change is not considered a priority for tourism stakeholders compared to other more immediate issues that affect their daily lives. Local factors and challenges, including daily business challenges, finding, training, and retaining qualified staff, reef degradation, and waste management, were identified as some of the more pressing issues that required their attention. Similarly, in a climate change vulnerability assessment in Funafuti, Tuvalu, McCubbin et al. (2015) determined that non-climatic determinants of vulnerability had a greater impact on community members than climatic conditions. In many cases, the climatic conditions that were described by participants interacted with non-climatic stressors, suggesting that “climatic stressors [are] woven into the fabric of the underlying socioeconomic and cultural conditions” (McCubbin et al., 2015, p. 47). Although non-climatic stressors may appear to be more immediate to stakeholders in Sri Lanka, the interaction between multiple climatic and non-climatic conditions will affect a destination’s future vulnerability to climate change (McCubbin et al., 2015). Additionally, as explained above, low risk perception of climate change may stem from the lack of data and certainty about how climate change and tourism interact in Sri Lanka. As such, both climatic and non-climatic factors, within the context of Sri Lanka’s ongoing social, economic, cultural, and environmental changes, will pose a barrier to future development since low preparedness will result in greater vulnerability to climate change impacts. This constrains future tourism development plans set out in the TSP as well.

<p>Recommendation 2: Communicate climate change as a local problem to tourism stakeholders</p>

Considering that most participants perceived climate change as a temporally and geographically issue, there is a clear need to situate climate change as a local problem (Becken, 2005) since risk perception can either drive or constrain stakeholder action (Trawöger, 2014). This recommendation is supported by the broader literature that states that “local action is essential” (Parker, Rowlands & Scott, 2003, p.181) and that the “overall scope of sustainability must be dealt with on a smaller scale at a lower, more local level” (Dodds & Butler, 2010, p.38). This measure also supports a community-based approach to adaptation as it would inform the community why adaptive action needs to take place and diminish the social barriers that instill a low sense of awareness and poor understanding of climate change among stakeholders

(Richardson & Witkowski, 2010). One way to communicate climate change as a local problem is to undertake education and awareness programs targeted to local tourism stakeholders (UNWTO et al., 2008) as it can help minimize external stresses and enhance the adaptive capacity of tourism stakeholders (Van Der Veecken et al., 2016). Acknowledging the range of direct and indirect climate change impacts on the tourism sector can also help frame future tourism planning and climate policy direction (Scott et al., 2012b).

Given that the global tourism industry is preparing for full integration of climate change in the business strategy (WTTC, 2015), tourism and climate change leaders in Sri Lanka must begin to communicate climate change as a local problem. This also supports the goals set out in the TSP. The Ministry of Tourism (2016) has plans to develop coastal tourism in previously war-affected regions in the dry zone (e.g., Mullaitivu and Jaffna), equipped with sufficient infrastructure, access routes, and tourist services. The Ministry of Tourism also intends to market ‘signature experiences’ throughout each tourism zone in order to diversify the tourism sector across the country. Some plans include an Ecotourism Discovery Circuit, envisioned as a ten day fully eco-certified tourist itinerary, a mini-cruise to visit coastal forts in Sri Lanka, and a Jaffna island exploration excursion where “instead of large hotel development on the islands, accommodations will be based on the water and excursion opportunities will be created on the islands” (MoT, 2016, p.72). To achieve these development goals, government officials and tourism leaders must be informed about existing and potential direct and cross-sectoral climate risks facing the tourism sector in order to make informed decisions that support sustainable tourism. Information about local climate change impacts, and potential interactions climatic and non-climatic stressors (McCubbin et al., 2015), must also be translated from the research community into languages and timeframes that will be suitable for tourism decision-making at the regional and local scale (Huq & Reid, 2004; UNWTO et al., 2008). Decisions that include environmental management practices – especially climate change adaptation – will likely increase the competitive advantage of Sri Lanka as a sustainable tourism destination (Becken, 2005; Scott & Verkoeyen, 2018).

7.2.4.3 Barrier 3: Poor institutional coordination and governance processes

As the literature review indicated, the development and implementation of adaptation strategies require government leadership (Biesbroek et al., 2013; Moyle et al., 2018; Scott et al., 2012a), yet at the time of writing, government leadership within the climate change and tourism

domain appears to be missing in Sri Lanka. Matasci et al. (2014) diagnose this barrier as being “lack of coordination and interaction in the tourism sector” and “the lack of political willingness to act at the various levels” (p.1242). Both the policy review and interview participants expressed that existing tourism activities are poorly regulated by the Ministry of Tourism and its institutions. For example, the NAP (2016) recognizes that adaptation strategies “are undertaken in an ad-hoc manner without proper coordination” (p.23). The TSP also highlighted barriers to tourism development that are related to institutional coordination. Specifically, the TSP criticizes the “deficient and politicized leadership and management at all levels of government” that has resulted in “limited awareness and participation in tourism by host communities...and inadequate attention to cultural heritage conservation and natural habitat preservation” (p.14). However, some studies have pointed out (Athulathmudali et al., 2011; Buultjens et al., 2018; Senaratne et al., 2009) that one reason for the low engagement from the tourism sector may be due to the fact that the Ministry of Tourism mainly operates in areas of licencing and regulation of tourism. As such, the dissemination and implementation of climate change strategies does not “exist within the mandate or operational modalities of the Ministry of Tourism” (Athulathmudali et al., 2011, p.38).

At the same time, policy planning and implementation arise from “rigid or weak institutions” (Matasci et al., 2014, p.1242) and is “symptomatic of governance systems that have a record of inadequate sustainability policy-making, weak enforcement, and non-transparent policy processes that favour developers or personal agendas (Shakeela & Becken, 2015, p.79). Indeed, adaptation is complicated by broader political conditions (Smit & Wandel, 2006). Despite emerging nearly ten years from the war at the time of writing, Sri Lanka’s political environment is still volatile considering the recent political upheaval that ended in December 2018. Dubbed as the ‘South Asian Game of Thrones’ (Gupta, 2018), the conflict began when President Sirisena dissolved the Parliament and attempted to replace the elected Prime Minister, Ranil Wickremesinghe, with the previous president, Mahinda Rajapaksa, acting as the interim Prime Minister (see Slater, 2018 and Aneez & Roy, 2018). The government shutdown continued on for more than seven weeks and resulted in significant economic and political repercussions (Aneez & Roy, 2018). Due to the country’s political instability, tourism arrivals during the first month of the peak tourism season experienced a decline in business and leisure visitors (Aneez & Roy, 2018), with some hotels recording a cancellation rate of approximately 20% (Aneez,

2018a). Additionally, the crisis affected Sri Lanka's foreign-exchange reserves, which dropped from US\$7.991 billion to US\$6.985 billion ('Sri Lanka 'coup' cost US\$1 bn in reserves', 2019), devalued the Sri Lankan Rupee by 3.8%, and downgraded Sri Lanka's credit rating (Aneez & Roy, 2018). The economic repercussions of the 2018 political crisis also exacerbated the existing strained fiscal conditions caused the droughts and floods in 2017, which resulted in a 16-year low in economic growth (Aneez, 2018b). Given that power and politics shape adaptation outcomes, this political environment is not conducive to supporting adaptation planning (Nightingale, 2017). Consequently, the current lack of institutional coordination, set against the backdrop of political and economic instability, leaves uncertainty for the feasibility of new policies that will facilitate adaptation in the tourism sector.

Recommendation 3: Strengthen institutional capacities to mainstream adaptation

Although the government of Sri Lanka has made significant progress in identifying tourism as a vulnerable sector and formulating sectoral adaptation options, climate adaptation cannot not exist in silos from tourism planning instruments (Smit & Wandel, 2006). As such, there have been many calls to mainstream the national adaptation plan into the tourism planning context (Athulathumudali et al., 2011; CCS & MMDE, 2016b; MMDE, 2011; Senaratne et al., 2009), a process by which key actors, including government, funding agencies, civil society, industry stakeholders, and local communities, increase their awareness about the potential impacts of climate change and integrate the issues into their activities, strategies, plans, and policies (Huq & Reid, 2004). This process depends on greater awareness and support about climate change, at the policymaking level and destination level (McLaughlin, 1987) as well as institutional leadership to facilitate and coordinate stakeholder engagement in climate adaptation (Biesbroek et al., 2013; Scott et al., 2012b; Moyle et al., 2018).

Climate change adaptation in Sri Lanka requires greater vertical coordination between national, sectoral, community, and civil society actors as well as horizontal collaboration within each level (Athulathumadali et al., 2011; Senaratne et al., 2009). It is recommended that the Ministry of Tourism appoints a coordinating unit that is responsible for implementing the adaptation plan that is recommended for the tourism sector in the NAP. This unit can be formed within the Ministry of Tourism, within an affiliated institution (such as the SLTDA), or as a newly established institution. Acting as a representative of the tourism sector, this unit would

work closely with the MMDE and the CCS, as well as the SCC, PAC, and the NWG. Collaboration and coordination between actors from diverse backgrounds can help to create a dialogue between government authorities, industry leaders, and communities about how the process of implementing climate policies can be facilitated.

Mainstreaming long-term climate information into planning decisions can help guide national and sectoral adaptation efforts (Jones et al., 2015). While uncertainty and long timeframes are intrinsic components of adaptation, it is important to strike a balance between both the industry and government's short-term planning with long-term adaptation planning. As such, policymakers and development practitioners should breakdown long-term climate change objectives and develop incremental adaptation actions that facilitate climate change mainstreaming within short- and medium-term planning cycles (Wise et al., 2014). However, efforts must be continually revised so to reflect the broader forces that shape vulnerability influence adaptive capacity (Wise et al., 2014). In this way, government and industry leaders can advise, and be advised, how best to enable stakeholders to respond to climate risks proactively. With regards to Sri Lanka's political environment, there is increasing recognition that stakeholders must acknowledge that climate adaptation cannot be separated from the broader cultural, political, economic, environmental, and developmental contexts in which it occurs (Schipper, 2016; Wise et al., 2014). Instead, adaptation should be conceptualized as pathways of interacting global changes and societal responses (Wise et al., 2014).

7.3 Conclusion

Considering that climate change is a global phenomenon, and that impacts will be felt at the local level, there is an urgent need to address the climate risks facing the economically important tourism sector in Sri Lanka. Prior to this study, there was only one known publication that explicitly addresses climate change challenges for the tourism sector in Sri Lanka (Buultjens et al., 2018). However the study is limited as it relies heavily on climate impacts identified in a report by the Ministry of Environment (2010). Furthermore, the authors did not explore the range of indirect climate-induced environmental, socio-economic, or policy impacts on Sri Lanka's tourism sector (Scott et al. 2012a), nor did the authors examine how tourism stakeholders have responded to climate change in policy and practice. As such, the aim of this thesis was to determine if the Sri Lankan tourism sector is prepared for climate change by expanding the state of knowledge on climate change impacts, examining the policy coherence between tourism and

climate change planning documents, and exploring how tourism stakeholders perceive impacts consistent with climate change futures at the destination level.

This study revealed that the tourism sector is not prepared for the risks and opportunities of climate change, despite being identified as one of the most vulnerable sectors in the country (CCS & MMDE, 2016; MMDE, 2016b). There are two salient findings that support this statement. First, climate change adaptation is not formally integrated into the national strategic planning instruments for the tourism sector. Beyond issue identification, the policy review found that climate change receives little attention in the tourism strategy and therefore does not enable stakeholders to take a planned or proactive approach to climate adaptation (IPCC, 2007; Moyle et al., 2018). Second, the analysis of the 14 interviews revealed that climate change is not an immediate priority or concern for the tourism sector – both at the national level and for local tourism stakeholders in Unawatuna. While all of the participants were acutely aware of changes in the climate system, they were more concerned about other conditions facing their business and the tourism sector. In fact, only two out of the nine local tourism stakeholders interviewed described coastal erosion and coral bleaching as an immediate concern. The themes that emerged from the interviews attest to the increasingly complex relationship between tourism and climate change, further complicated by different risk perceptions and priorities that preoccupy industry stakeholders. These complexities will have further implications on how policymakers and tourism leaders choose to move forward with developing tourism in Sri Lanka.

As Huq and Reid (2004) point out, successful climate change adaptation is an incremental process whereby adaptation processes must be integrated within existing strategies and plans at various levels of government. This study identified three barriers that hinder the mainstreaming process. These were 1) Uncertainty over future climate change projections in Sri Lanka – literature review indicated an information gap, interviews suggested an information gap; 2) Perception of climate change as a spatially and temporally distant issue – interviews suggested a disconnect, literature review provided supporting secondary information; and 3) Poor institutional coordination and governance processes – interviews indicated a need for stronger leadership; literature review indicated a need for mainstreaming. Responding to these barriers, this study recommends the following actions: 1) Conduct research studies to improve understanding of sector relevant climate change impacts in Sri Lanka; 2) Communicate climate change as a local problem to tourism stakeholders; and 3) Strengthen the Ministry of Tourism's

institutional capacities in order to mainstream adaptation. However, given the multiple stressors facing tourism stakeholders in Unawatuna, and the complex political environment of Sri Lanka, effective climate change adaptation will only occur if these stressors and barriers are addressed. Implementing these recommendations will not automatically equate to higher risk perception (Ratter, Philipp & Storch, 2012) or increased adaptive capacity (Saarinen & Tervo, 2006), but will provide a foundation to facilitate climate adaptation in the tourism sector. The recommendations proposed here work together to remove social and institutional barriers to adaptation (UNWTO et al., 2008), which must be addressed before more tangible adaptation actions can occur (Matasci et al., 2014).

While one of the strengths of the case study approach is in its ability to capture the ‘lived reality’ of participants (Hodkinson & Hodkinson, 2001, p.3), it is difficult to generalize the findings given the small sample size and contextual findings. However, the results of this study can be used to supplement future studies about the tourism and climate change interface in Sri Lanka. While data limitations exist, the findings presented in this study help to fill a gap in the tourism and climate change literature in Sri Lanka – which to date has only broadly identified climate change impact on tourism in national level studies (Ahmed & Suphachalasai, 2014; Athulathmudali et al., 2011; Bakker, 2018; Buultjens et al. 2018; CCS & MMDE, 2016; DMC, 2012; MMDE, 2011; Frykman & Seiron, 2009; Senaratne et al., 2009). As such, this thesis contributes to the some of the priorities listed in the NAP for the tourism sector: 1) “to increase the awareness of tour industry operators on climate change and its impacts” and 2) “to conduct research studies on climate change impacts on tourism and recreation” (CCS & MMDE, 2016, p.49).

Among the research community, this study fills the knowledge gap of regional climate-related risks to tourism (Hall, 2018), particularly the coastal tourism sector in the South and South-East Asia sub-regions, and broadens the discussion of tourism and climate adaptation in the context of an ongoing rapid development process (Huq & Reid, 2004). It is likely that other post-conflict developing countries, particularly in Asia, will face similar challenges with regards to mainstreaming climate change adaptation into the tourism sector.

The results from this study can be used to inform forthcoming tourism plans and development strategies that will guide the industry to the long-term national economic plan, Vision 2025. As Sri Lanka is a signatory of the Paris Agreement, findings from this research can

be used to inform future climate change communications, including the NDC, under the UNFCCC. At the industry level, this research can be used to encourage businesses to integrate climate change adaptation strategies in order to increase their competitiveness in the future. At the community level, the findings of this thesis can be used to facilitate the programming of tourism and climate change stakeholders and can be integrated as relevant knowledge of environmental issues into training programs. Case studies, such as the embedded case study of Unawatuna presented here, can provide support for revising tourism development plans to include higher consideration for climate change impacts and coastal management. The embedded case study of Unawatuna is a useful resource for industry leaders to understand how climate change might potentially aggravate the vulnerability of local communities – especially in the context of multiple factors and competing priorities. This thesis acknowledges that some developing countries or SIDS may not have the fiscal capacity to finance coastal adaptation strategies and therefore proposes a destination-level tourism levy in order to finance adaptation strategies, such as the proposed beach nourishment levy for Unawatuna. When put together, these findings can help tourism stakeholders and policymakers situate climate change as a local problem for the tourism sector and those who rely on the tourism industry in surrounding communities.

7.4 Future research

This thesis should be considered as a launching pad for future research in the area of climate change impacts on the Sri Lankan tourism sector. Recognizing that Sri Lanka is a geographically diverse country, this study focused on documenting and synthesizing climate change impacts to coastal tourism, assessing policy coherence between tourism and climate change, and examining stakeholder perception of climate risks in Unawatuna. However, it is important to note that the climate change impacts extend past the climate change drivers that are described in this thesis. Transboundary impacts will have an impact on the tourism system in Unawatuna, as will the impacts in other parts of the country. Further investigation is needed to understand the range of climate change risks, vulnerabilities, and barriers facing the tourism sector and how they will interact with non-climatic drivers in the future.

Considering the longer history of tourism development in the south-western region compared to emerging tourism destinations in the North and East coasts, this thesis focused on Unawatuna as an embedded case study site. In order for industry stakeholders to have the full

picture of climate change impact on coastal tourism, future research would be useful in emerging destinations, particularly the north and north-east regions in the dry zone where the government of Sri Lanka has given high priority to developing tourism (MoT, 2016). More specifically, future vulnerability assessments should be conducted in potentially highly vulnerable coastal areas in the northern and eastern regions, that have been “severely under-developed and under-utilized” due to the war and the tsunami (Dastgheib et al. 2018a), where the Ministry of Tourism intends to implement the TTPs, including Batticaloa, Ampara, and Trincomalee (East Coast Sunrise Corridors) and Jaffna (Jaffna Islands Exploration). These districts were also found to have the lowest adaptive capacity in Sri Lanka due to the lack of economic, social, human, physical, and natural assets (Thathsarani & Gunaratne, 2018). This will have significant implications for the tourism sector and surrounding communities considering that the peak tourism season currently occurs during the NEM when there is less rainfall and more favourable conditions for tourism in destinations in the west and south-west coast. Greater water demand from tourism during seasonal periods with less rainfall and more dry spells will likely exacerbate water scarcity in already dry and arid destinations.

Additionally, considering that the tourism sector must plan and implement climate adaptation actions (MMDE, 2016b), future research should compare the associated timelines and costs of climate change on tourism against tourism planning cycles and project investment timeframes. This would help policymakers and tourism leaders prioritize their climate action within the sector. Policymakers and tourism leaders may also find value in future research that reports on the economic threats associated with perceived climate change impacts. This could then be used to inform comparative climate vulnerability assessments of the tourism sector in Asia.

7.6 Final thoughts

The IPCC (2014a) has indicated that the limited adaptive response to climate change has already affected the foundation for sustainable development. So it is with sustainable tourism. The paradox of climate change and tourism is that despite a growing global acceptance of climate change, there has been a general lack of industry interest and effort to adapt in Sri Lanka. While climate change is understood to be a global phenomenon by participants in the study here, this awareness has neither translated into Sri Lanka’s tourism policy domain or at the destination level. Sri Lanka’s tourism sector’s response to climate change is inconsistent with the message

that is being promoted by international tourism agencies: that climate change is “the greatest challenge to the sustainability of tourism in the 21st century” (UNWTO et al., 2008, p.38). Global tourism leaders are also beginning to recognize the need to fully integrate, climate change and related issues into business strategy and to support the decarbonization of the tourism sector over the next 20 years (WTTC, 2015). Indeed, any situation that adversely affects economic growth, harms or displaces more than a billion people, and threatens national security “is not compatible with sustainable development” (Scott et al. 2015, p.12). Not only does this pose a challenge for the industry to respond to climate change, but more broadly, challenges Sri Lanka’s pursuit of sustainable tourism and the SDGs.

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APPENDIX I

World Bank Climate Change Knowledge Portal Calculations for Sri Lanka

Baseline Temperatures and Projected Monthly Temperatures

	Baseline (1961-1990)	End-of-century 2080-2099 (°C)	
		RCP4.5	RCP8.5
January	24.36°C	28.93	30.34
February	24.25°C	29.65	31.04
March	24.71°C	30.91	32.38
April	25.38°C	31.89	33.46
May	26.35°C	31.54	33.20
June	26.73°C	30.44	32.14
July	26.55°C	29.72	31.34
August	26.68°C	29.53	31.11
September	26.56°C	29.63	31.17
October	26.28°C	29.60	31.10
November	25.89°C	29.37	30.85
December	24.97°C	28.89	30.38
Average	26.75°C	30.01	31.54
Change		+3.26	+4.79

Source: World Bank (2018a)