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Resilience and sustainability: a complementary relationship? Towards a practical conceptual model for the sustainability–resilience nexus in tourism

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ABSTRACT

"Sustainability" has endured as an important concept for tourism scholars, and volumes have been written about how to achieve this holy grail of the tourism industry. Sustainable tourism destinations are often promoted as the ethical choice for discerning travellers, with some marketers taking full advantage of the widely acknowledged ambiguities implicit in the term. More recently "resilience" has generated appeal in the academic tourism literature as a term that might capture core aspects of sustainability, while acknowledging the considerable influences that multiple contexts have on the capacity of communities to adapt and ultimately sustain their tourism enterprises. The resilience concept encompasses an inclusive and integrative "social ecological systems" approach which gives it a firm interdisciplinary underpinning in its application in tourism. While in a tourism context sustainability and resilience are kindred terms, relatively little scholarly effort has been committed to a critical treatment of these concepts. Addressing this deficiency, we present a conceptual model to discuss the relationship between sustainability and resilience in tourism. Drawing on examples from New Zealand's nature-based tourism sector, this conceptual paper explores the insights that a critical treatment of the sustainability–resilience nexus might offer both academics and practitioners in the field of tourism studies.

Introduction

All tourism systems are subject to a range of vulnerabilities that threaten to undermine their integrity (Lew, 2014; World Economic Forum, 2015). In geographically peripheral nature-based tourism (NBT) destinations, businesses are especially susceptible to perturbations within the social, economic and/ or physical environments that comprise the tourism system (Hall & Boyd, 2005). Over the past four decades, a fundamental challenge for many NBT destinations in peripheral regions has been "sustainability" (Brouder, 2012; Hall, 2007a; Puhakka, 2008). Various measures have been used as indicators of success here, including increased or maintained profitability, improved environmental outcomes, and dispersed community benefits (Becken & Simmons, 2008; Zeppel, 2015).

Key criticisms of the sustainable tourism concept have focused on spatial (local–global impacts) and temporal (sustained for how long?) scales (Becken & Schellhorn, 2007; Hall, 2007b), identification

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of beneficiaries (sustained for whom?) (Higgins-Desbiolles, 2010; Mowforth & Munt, 2008), and the intent (what is to be sustained?) (Hall, Gössling, & Scott, 2015; McCool, Butler, Buckley, Weaver, & Wheeller, 2013).

While not unproblematic, "resilience" – the capacity of a system to absorb disturbance and reorganise while undergoing change (Folke et al., 2010; Walker, Holling, Carpenter, & Kinzig, 2004) – has recently emerged as a potentially useful framework through which to understand the NBT system and characterise relationships between conservation, community and enterprise (Becken, 2013; Biggs, 2011; Lew, 2014; Strickland-Munro, Allison, & Moore, 2010). A critical aspect of resilience is adaptation (Cochrane, 2010; Nelson, Adger, & Brown, 2007), or the ability (in this case of tourism-reliant communities or businesses) to renew or reorganise in the face of conditions that make previous *modus operandi* untenable. The ultimate outcome of successful adaptation or renewal is a sustained business, community or economy, however, as applied concepts, both resilience and sustainability often suffer from poorly defined parameters – especially in relation to spatial and temporal scale (Hall, 2007b).

Tourism and conservation agencies have sought to address issues of local sustainability in many cases. Similarly, communities and businesses may have developed capacity (resilience) to respond to immediate and sudden threats to their functional operations. Few, however, have demonstrated a capacity to adapt to incremental threats to their longevity (sustainability). In the tourism literature, there is considerable emphasis on resilience to the immediate challenges (local impacts, natural disasters or financial shocks, for instance) (Biggs, Hall, & Stoeckl, 2012; Orchiston, 2013; Prideaux, 1999), yet there is merit in conceptualising resilience as a dynamic long-term state, where there are obvious parallels with the sustainability concept.

While to some extent, sustainability and resilience may be highly compatible concepts, there are also innumerable cases in which the adaptive strategies employed in tourism communities fail to meet the threshold of long-term or even medium-term sustainability. Although resilience has been characterised as a survival attribute – future-oriented and integrative (Lew, 2014; McCool, 2015), there is no guarantee that the decisions communities make in the interests of maintaining the short to medium term economic viability of their tourism enterprises will lead to outcomes that are desired and sustainable in the long term.

Using examples from recent empirical case studies of remote, NBT areas on the West Coast of New Zealand's South Island, this paper offers a conceptual critique of the extent to which resilience is similar to, or different from, the established sustainability concept. In doing so we question whether or not the idealised "steady state" of sustainable tourism is still realistic or relevant for peripheral NBT destinations. Our critique interrogates the adequacy of sustainability with reflection upon whether the most sustainable destinations are also the most resilient (and vice versa). We also ask if "resilience" may usurp sustainability in the discourse of tourism business enterprise or if resilience can be accommodated as an increasingly important part of the sustainability discourse. While some scholars have implied that resilience may be a new way to conceptualise sustainability (Carpenter, Walker, Anderies, & Abel, 2001; Lew, 2014; McCool et al., 2013; Miller et al., 2010; Moyle, McLennan, Ruhanen, & Weiler, 2014; Strickland-Munro et al., 2010; Walker et al., 2004), we propose that the two concepts deviate in important ways which, in the interests of both theory and practice, need to be critically explored.

Tourism and the sustainability tradition

Formal acknowledgement of the importance of sustainable development dates to the UN Brundtland Report (World Commission on Environment and Development, 1987), which set out to engineer a shift from market-driven economic strategies and unlimited economic growth (Young, Markham, Reis, & Higham, 2015), to accommodate resource conservation and sustainability (Mitchell, Wooliscroft, & Higham, 2013). The principles of sustainable development are anchored in "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development, 1987). While this often cited definition

has universal appeal, the operationalization of sustainable development raises a raft of challenging questions that have become ever more perplexing in a rapidly changing global world (McCool et al., 2013). McCool et al. (2013) ask how can development be sustainable, and what is it that needs to be sustained, now and in the future? The principles of sustainable development, which highlight the importance of economic (business), social/cultural and environmental accountability as the three pillars of sustainability, raise important questions regarding sustainable tourism.

Since at least 1987, the notion of sustainability has become entrenched in tourism studies, and it has been noted that sustainable tourism is "perhaps the most prominent feature of contemporary tourism discourse" (Higgins-Desbiolles, 2010, p. 116). This theme evolved from initial recognition of, and growing concern in the 1980s for, the predominantly local impacts of tourism (Mathieson & Wall, 1982; Hall & Page, 1999). In challenging the ideology, discourse and hegemony of the UNWTO (Mowforth & Munt, 2008), which promoted tourism as a "smokeless industry", the attention of the academic community has increasingly sought to answer questions of tourism sustainability (Edington & Edington, 1986). This tradition has accommodated varied disciplinary insights from fields such as social anthropology (MacCannell, 1973), sociology (Cohen, 1972), geography (Duffus & Dearden, 1990) and ecology (Newsome, Moore, & Dowling, 2012) to add specialized and critical insights into questions of local sustainability.

More critical insights into sustainable tourism initially addressed issues of environmental impact and social justice (McCool et al., 2013). Sustainable tourism development became synonymous with ecotourism and other alternative forms of NBT. Mass tourism came to be seen as the antithesis of the sustainable tourism ideal, although this overly simple treatment of sustainability soon came under scrutiny and has been thoroughly and appropriately critiqued (Butler, 1990, 1991; Hall, 1994; Wheeller, 1991, 1995).

The very concept of sustainable tourism has, from the outset, been the subject of intense academic debate (Butler, 2015). Reflecting the social, economic and environmental pillars of sustainable development, the notion of sustainable tourism has been taken up by stakeholders with specific interests in resource management, environmental conservation, community development and poverty alleviation, and has been applied to the longevity of individual tourism businesses and destination marketing organisations (McCool et al., 2013). Such specific interests have moved the focus away from what sustainable tourism can contribute to sustainable development and resilience. Here our discussion of sustainable tourism focuses upon sustainable and resilient communities and is framed within sustainable regional livelihoods which includes but is not limited to individual tourism businesses.

In more recent years, the problematisation of sustainable tourism has extended to fundamental questions of spatial and temporal scale (Hall, 2007b). According to McCool et al. (2013), p. 217), models of sustainability in the late twentieth century were based on the assumption that the world was "… predictable, linear, ultimately understandable and basically stable", which has also been questioned (Farrell & Twining-Ward, 2005). This assumption has been shaken by questions of system complexity (McCool, 2015), global environmental risks (Young, Higham, & Reis, 2014) and natural disasters (Faulkner, 2001). The relationships linking tourism development and the global climate crisis, for example, were first brought to the attention of the academic community by McBoyle and Wall in the 1980s (McBoyle & Wall, 1987; Wall, 1993; Wall, Harrison, Kinnaird, McBoyle, & Quinlan, 1986).

"…[D]espite its prominence for several decades, achieving sustainability remains as elusive as ever" (Higgins-Desbiolles, 2010, p.116), such that there is a pressing urgency to accommodate and address new spatial and temporal trajectories in the field of tourism studies, trajectories that extend far beyond a framework of steady-state tourism sustainability (Hall, 2007b). Climate change has greatly challenged the sustainability tradition, demanding that the spatio-temporal boundaries of local sustainability be reframed (Bostrom, 2013; Karlsson, 2015), a redefinition that has drawn the very concept of sustainable tourism into question (Becken & Schellhorn, 2007; Peeters & Dubois, 2010). Accommodating global catastrophic risks (Bostrom & Ćirković, 2008), which present the threat of total and irreversible system shifts (Orchiston & Higham, 2015), is fundamentally irreconcilable

with local, steady-state sustainable tourism. If one thing is now abundantly clear, it is that local steady-state sustainable tourism is an archaic frame of thinking, and that greater attention must be paid to the complex socio-ecological systems within which sustainable tourism occurs (McCool, 2015).

Climate change has challenged the sustainable tourism research community to shift from predominantly local thinking, to accommodate issues of global social and environmental change (Gössling & Hall, 2006; Becken & Schellhorn, 2007; Higham, Cohen, Peeters, & Gössling, 2013). As the spatial focus has been extended from local to global sustainability, accommodating challenges such as climate change, biodiversity and natural hazard risk, so the timescales of sustainability have also been drawn into question (Morton, 2010, 2013). Environmental risks that are spatially and temporally dispersed fundamentally challenge conventional sustainable tourism thinking. So too do global social risks that lie within political communities, financial markets and public health domains, which may be spatially far removed from, yet in practice closely implicated in, the sustainability of peripheral tourism destinations. It is evident that the study of sustainable tourism must respond to "…the increasingly global and inter-generational risks produced by the very process of modernization itself" (Young et al., 2015, p. 2). Framing the discourses of sustainable development and resource conservation across 20-30 year timeframes has become manifestly inadequate (Meadows, Randers, & Meadows, 2004), although longer time scales are difficult to operationalize.

The emergence of resilience in the tourism discourse

Where the sustainability paradigm sought solutions to counter crises and perturbations in order to maintain our stable world, it appears we are now coming to terms with chaos and unpredictability (Faulkner, 2001). The term "resilience" was developed in the 1970s in the ecological sciences, to describe the ability of a system to respond to and recover from a perturbation (Holling, 1973). Today, its application has broadened to include linked, non-linear social-ecological systems (SES) providing a theoretical underpinning towards developing new ways to address unstable and chaotic systems (Becken, 2013; Cochrane, 2010; Russell & Faulkner, 2004). The concept of resilience requires adaptive alternatives to address threats from a full range of natural or human-induced crises and uncertainties, including those precipitated by frequent unpredictable events and longer term incremental hazards associated with climate change. Resilience demands adaptability and systems thinking within the wider socio-ecological system (Cochrane, 2010; Lew, 2014; Strickland-Munro et al., 2010; Bosak, 2016). However, while resilience can be considered an attribute that mitigates uncertainty and unpredictability through the adoption of adaptive social and business practices, change must be considered through the SES lens (McCool, Freimund, & Breen, 2015). Insufficient acknowledgement of deep complexity can lead to unexpected outcomes, resulting in "more problems, less resilience and to developmental trajectories that are more challenging to deal with" (McCool et al., 2015, p. 296).

Resilience in the tourism sector has been an increasing focus of academic endeavour, including conceptual discussions (Cochrane, 2010; Lew, 2014; McKercher, 1999; Bosak, 2016) and application to tourism case studies (Becken, 2013; Biggs, 2011; Espiner & Becken, 2014; Farrell & Twining-Ward, 2004; Orchiston, 2013). Faulkner (1999) suggests that chaos can rapidly envelop tourism activities due to the complexity of tourism systems and their inherent vulnerability to external threats, such as natural hazards, or social, political and economic crises (including war, pandemic and economic crises). Resilience thinking is valuable in addressing uncertainty, where a full understanding of the existing riskscape, as well as potential future risks, is unknown. Identifying and addressing such complex unknowns, however, is a major challenge, both for academics and for tourism practitioners. Becken (2013) argued that the sustainable tourism research paradigm has not engaged with advances in complex SES research, and that resilience theorists have more proactively addressed this knowledge gap. Bramwell and Lane (2011) note, however, that the concept of sustainable tourism has advanced from being a negative, restrictive paradigm, to one that is positive, and a leader in providing innovative ideas in both research and practice; ideas that can be implemented prior to crises as well as post

crisis. Luthe and Wyss (2014) suggest tourism destinations need novel strategies to cope with change and that, conceptually at least, resilience offers a useful framework to develop new ways of planning and operating in times of high uncertainty. The capacity of destination organizations and tourism enterprises to be agile and adaptive in responding to rapid, unexpected change is one clear point of difference between the concepts of resilience and sustainability.

Further supporting the burgeoning utility of the resilience concept in tourism, Lew (2014, p. 14) suggested that "resilience planning has emerged as perhaps a more effective approach to community planning and development than the sustainability paradigm". Lew (2014) describes three resilience planning approaches: (1) an engineering approach to return the built and social environments to a pre-disaster state through mitigation, planning and response strategies; (2) a socio-ecological approach where changes in the physical or human environment results in adaptation, and thresholds are identified that mark shifts in the SES; and (3) a synoptic approach where "change and adaptation are constants… and stability and equilibrium are rejected as temporary illusions" (Lew, 2014, p. 15). These engineering and socio-ecological planning needs highlight the broad, systems-focused perspectives that must be taken into account in developing more resilient tourism businesses and destinations. Strickland-Munro et al. (2010), p. 504) agree, suggesting that systems thinking can be used in "…aligning the aims of sustainability and fostering system resilience to withstand disturbance and cope with uncertainty".

Various factors that might influence resilience within tourism destinations and organisations are emerging within the academic discourse. For instance, Orchiston, Prayag, and Brown (2016) suggest two broad indicators of resilience success: planning and culture, and collaboration and innovation. Biggs (2011) studied Great Barrier Reef tourism operators in northern Australia, and found enterprise resilience was deeply embedded in lifestyle identities and human capital, with greater resilience shown by business owners who were committed to reef tourism as a lifestyle choice. Business age, size and experience are also important factors in determining enterprise resilience, illustrated in the reef (Biggs, 2011), and in New Zealand's Southern Alps tourism industries (Orchiston, 2013). It has been demonstrated empirically that larger, more established business operations with experience of past crisis events are more likely to innovate and adapt in the face of future crises (Biggs, 2011; Orchiston, 2013). Preparedness and crisis management planning is also more prevalent within larger, better resourced tourism operations (Orchiston, 2013; Ritchie, Bentley, Koruth, & Wang, 2011).

Given the apparently wide-ranging factors considered important in developing resilience, the question remains: how do resilient practices align with fundamental issues of tourism destination and enterprise sustainability? The following section presents a conceptual model to illustrate the relationship between resilience and sustainability in the NBT sector.

Sustainability and resilience: re-thinking conceptual relationships in tourism

Conceptualising resilience and sustainability is complex and at times confusing in the academic discourse. In some senses, it is possible to see parallels between the two concepts as they apply to tourism. Both have been used to interpret components of social, economic and environmental maintenance in destination communities, and at initial inspection, the ideals appear compatible.

Several authors have considered the articulation between the concepts, including McCool (2015, p. 233) who, in reference to the tourism economy, argued that sustainable tourism is "…not a type or scale of business, rather it is a strategy to build or maintain system resilience". For McCool, sustainable tourism should support resilience – not the other way around (as we argue below). This is part of McCool's critique that twenty-first century tourism planners and developers should look more earnestly at what tourism can sustain in a community, rather than how tourism activity itself can be sustained. Hence, he argued that "[t]he principal question facing tourism in the 21st century is the extent to which it can contribute to the resilience of communities in this era of integration and globalization" (McCool, 2015, p. 233).

Calgaro, Lloyd, and Dominey-Howes (2014) suggested a Destination Sustainability Framework for analysing destination vulnerability and resilience to multiple shocks and stressors. In adopting an inclusive, SES approach, the authors combine a range of contemporary perspectives on vulnerability, resilience-thinking, sustainability science and others. While their analysis is impressive, they do not explicitly examine the relationship between resilience and sustainability. Lew (2014), however, does imply some conceptual comparisons, developing a model for "scale, change and resilience in tourism" to suggest that resilience planning may be a more effective development approach than the conventional sustainability paradigm. Drawing on Derissen, Quaas, and Baumgärtner (2011), Lew (2014, p. 14) claims that sustainability emphasises mitigation to prevent change, whereas resilience adapts to change by building in capacity "…to return to a desired state following both anticipated or unanticipated disruptions". While this is an appealing conceptual proposition, such a distinction may serve to underestimate the capacity of resilience thinking to encourage problem solving, which can include mitigating existing and anticipated threats. Moreover, Lew's distinction does not fully acknowledge the potential of disruptions to produce new modes of operation which may not involve "return to a desired state". Tourism destination communities can capitalise and build on crisis events, precipitating positive change and more resilient practices – which may or may not be interpreted as sustainable.

While both sustainability and resilience have coexisted in the academic tourism discourse for some time, the overlap or articulation between the two concepts is yet to be thoroughly addressed. With this objective in mind, and in order to conceptualise the complex relationships within the tourism system and between the concepts of sustainability and resilience in particular, we propose a model illustrative of the NBT sector in New Zealand but with wider application to other tourism settings. This conceptual model (Figure 1) situates NBT destinations at the centre of an SES system, subject to continuous local and global scale influences which ultimately shape the future of the destination. These wider scale features (depicted in the outer rim of the sphere in each representation) could be numerous, and we have not indicated the full range here, but among the most important for New Zealand in coming decades are likely to be the decreasing availability of relatively cheap energy sources, the effects of a warmer and wetter climate, and the impacts of natural disasters.

The model derives from our argument that the most sustainable destinations are those with high levels of resilience. Because resilience is necessary but not sufficient for sustainability, it is illustrated here as specialised spheres often intersecting with, yet conceptually separate from, sustainability. Resilience then may be seen as a "buffer" or a "lubricant" enabling the mechanisms of sustainability. Without resilience, sustainability cannot be realised.
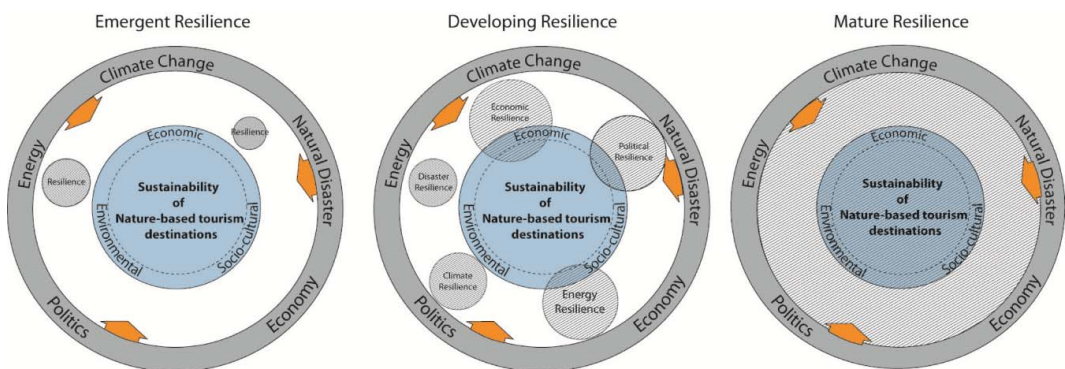

Figure 1. The conceptual relationship between resilience and sustainability in NBT destinations. In response to exposure to various perturbations arising within the macro context, resilience is illustrated as a range of shifting spheres – sometimes neatly intersecting with sustainability principles ("mature resilience") and other times not at all ("emergent resilience").

The relationship between sustainability and resilience in tourism can be illustrated as three potential states: emergent, developing and mature. Where destinations lack resilience or where resilience is emergent (as depicted by the smaller number and size of the resilience spheres in Figure 1), the sustainability of the tourism system is most vulnerable to the perturbations associated with the wider socio-political, economic and environmental system (Hopkins & Becken, 2015). Destinations (or specific businesses) where resilience is more developed, covering a wider range of potential exposure scenarios, create an important buffer against key threats to sustainability. While the "mature" state of the relationship – where all elements of resilience overlap with sustainability – is theoretically attractive, it may be challenging to achieve given the range of constraints facing NBT destinations in New Zealand, including peak oil, dynamic natural processes and the service and infrastructure constraints associated with peripherality (Hall & Boyd, 2005).

In reaction to exposure to the various perturbations of the macro (SES) context, resilience is illustrated as a number of distinct shifting spheres – sometimes neatly intersecting with sustainability principles ("mature resilience") and other times not at all ("emergent resilience"), akin to a filter or lens that is not always in focus or alignment with sustainability. Hence, we argue that, beyond the "emergent" phase, resilience is always part of the sustainability of NBT destinations, but the two concepts are distinct and not necessarily in harmony. For example, recent evidence of maladaptive strategies in the New Zealand ski industry (Hopkins, 2014, 2015) and NBT contexts (Espiner & Becken, 2014) are noted as working against the principles of sustainability.

Drawing on the model presented as Figure 1, the following two sections outline a case study of the NBT sector in New Zealand, emphasising some of the challenges and opportunities in developing resilience in peripheral tourism destinations within the context of natural hazards, including climate change. This analysis utilizes secondary data from both empirical studies of South Island tourism towns (e.g. Espiner & Becken, 2014; Orchiston, 2012, 2013) and other literature sources including geophysical reports, environmental and social impact documents, social and historic data about the West Coast community, emergency response plans and tourism development strategies.

The New Zealand nature-based tourism industry: external risks

New Zealand is a peripheral tourism destination in the southern Pacific Ocean, requiring a minimum of three hours of air travel by passenger jet to reach its closest neighbours: Australia and the Pacific Islands. The country's key international tourism markets in 2015 were Australia (43%), China (10%) and the United States (8%), together with traditional and emerging markets in Europe and Asia totalling 3.1 million visitors (Statistics New Zealand, 2015). More than 95% of all international visitors arrive by air (Statistics New Zealand, 2015). The core of New Zealand's tourism offerings is a strong nature-based activity industry, with mountains, coastlines, rivers and lakes forming the focus of most visitor attractions. Around these scenic and adventure-oriented settings, small towns and settlements increasingly rely on tourism to sustain livelihoods, notwithstanding a range of external risks that threaten their survival. The NBT industry on the West Coast of New Zealand's South Island (discussed below) is illustrative of the conceptual model presented above, with varying degrees of resilience developing over recent years at destination and enterprise levels.

Distance from key markets is an insurmountable challenge to environmental sustainability in the New Zealand tourism industry, in the light of peak oil, oil price volatility and climate change considerations (Becken, 2008a; Higham, Cohen, & Cavaliere, 2014). Furthermore, New Zealand's tourism infrastructure, services and visitor attractions are heavily fossil-fuel based (Becken, 2005, 2009; Becken & Simmons, 2002). In the absence of a comprehensive passenger rail network, and with the far-flung character of iconic visitor sites, visitors rely upon aviation services, cars, campervans and tour coaches to access these locations. Increasingly, tourists are opting for self-drive options as the market "matures" and visitors embrace the itinerary freedom that this affords (Becken & Simmons, 2002). Recent data shows the prevalence of private transport, with rental cars and campervans (42%), private cars (27%) and air (20%), the most common modes of transport among international visitors

while in New Zealand (Statistics New Zealand, 2015). Regionally, independent travel is even more pronounced, with one study revealing that 70% of all visitors to South Island's West Coast arrive by passenger car (including rentals) (Moore, Simmons, & Fairweather, 2001). The international visitor's New Zealand itinerary is characterised by "touring" (Pearce & Schott, 2010), supplemented by a range of resource-intensive adventure-based activities (e.g. jetboating and heli-skiing), leading to an inescapable and awkward juxtaposition with New Zealand's "100% pure" tourism marketing claims.

Despite (and in some cases perhaps because of) the tyranny of distance from international markets, many of New Zealand's peripheral scenic towns are settings in which tourism entrepreneurs have thrived (Conradsen & Pawson, 2009). However, compounding issues of sustainability are factors such as the size and composition of NBT communities and the often seasonal character of the attractions (and visitation in general). These factors have implications for social and economic dimensions of sustainability, in particular (e.g. jobs, schools and families). Like other parts of the tourism industry, the NBT sector is heavily service-oriented and hence relatively low-wage (Lacher & Oh, 2011; Riley, Ladkin, & Svivas, 2002). Land prices are often high, reducing opportunities for many tourism workers to join the property market (Ryan, 2003), increasing transiency and further eroding community stability.

Sustaining tourism enterprises in the New Zealand nature-based sector is also challenged in terms of the physical operational environment, significant aspects of which are outside the control of those who seek to offer tourism experiences. Many of New Zealand's iconic attractions are set within an environment of highly dynamic land and marine systems, subject to conditions that change abruptly (Purdie, Gomez, & Espiner, 2015). Floods, earthquakes and volcanic eruptions can disable a region's tourism system for days, weeks or even months depending on the scale of the event. In September and October of 1995, and again in June and July 1996, for instance, a series of ash-producing eruptions and accompanying lahars at New Zealand's Mt Ruapehu closed airports, caused damage to hydroelectric power facilities, and closed State Highway 1 (Becker, Smith, Johnston, & Munro, 2001). As a result of these events, the ski seasons in 1995 and 1996 were disrupted causing significant financial loss for ski operators, accommodation providers and the tourism retail sector (Johnston, Houghton, Neall, Ronan, & Paton, 2000). Equally, slow onset disasters can undermine the tourism product over the long term, such as the effects of changing climate on glacier tourism, the ski industry or marine attractions (Becken & Wilson, 2013).

Illustrating sustainability and resilience in the nature-based tourism sector: the South Island's West Coast, New Zealand

Having outlined the macro-level dimensions of New Zealand's NBT system, and identified some of the wider social, economic and environmental risks, it is possible to examine the conceptual relevance of both sustainability and resilience within a specific destination on the South Island's West Coast. This is a region of outstanding natural beauty, home to an extensive network of protected areas, including the Te Wahipounamu World Heritage Area. Economically and culturally, the region has deep significance; the indigenous Maori making initial use of its many resources and, from the early nineteenth century, when the first European settlers carved out their existence from forestry and mining activities (Balcar & Pierce, 1996). While agriculture and mining remain important in the modern West Coast economy, the significance of the tourism sector has become increasingly apparent, with tourist visits to the region doubling between 1999 and 2005 (Conradson & Pawson, 2009). Tourism is now viewed as a vital component of a diversified economy, with the potential to grow into the future and provide livelihoods less dependent on resource extraction for local residents.

The West Coast is linked by road and rail to the rest of the South Island; however, access is restricted to alpine passes, with narrow, elongated transport corridors increasing the vulnerability of the highway network (Robinson, Davies, Wilson, Orchiston, & Barth, 2015). The topographic high of the Southern Alps coupled with the predominantly westerly flow of weather systems results in high precipitation rates (up to 12 m/annum), which creates an extremely active geomorphic and fluvial

environment (Robinson & Davies, 2013). In addition, the Southern Alps lie on an active tectonic plate interface, represented by the Alpine Fault, a 450 km long fault that has a long record of generating magnitude 8 earthquakes approximately every 300 years, the last of which was in 1717 AD (Berryman et al., 2012). It is clear that while the geomorphic, climatic and geologic environment of the West Coast has created areas of high scenic value, it is also a setting that has a demonstrated a diverse natural hazard portfolio. A range of predominantly environmental risks has the potential for unprecedented damage to New Zealand communities and infrastructures, which raises perplexing questions relating to sustainability planning in the context of the tourism industry specifically.

Espiner and Becken (2014) explored dimensions of the tourism industry's vulnerability and evidence of social adaptation at the Glaciers in Westland National Park on the West Coast. Westland Glacier tourism exists within an environment of dynamic change with respect to glacier morphology and a range of other climatic and natural hazards. Among the identified threats to the destination's future were the effects of climate on the accessibility of the glacier attractions, the security of affordable fuel and potential for natural hazard events (floods and earthquakes, in particular). One major issue in recent years has been the closure of walking access to the glacier due to rapid glacial retreat and increased risk of calving at the terminus of the glacier. As a consequence, glacier tourism operators had to change their business practices, leading to sharp increases in both fixed wing scenic flights and glacier landings by helicopters. Espiner and Becken (2014) emphasised the "pioneer spirit" and resilient attitudes that characterised tourism industry stakeholders as they responded to external drivers of change through a range of measures, including product diversification, vehicle fleet upgrade and fuel-efficiency measures, emergency management and civil defence planning. While such business adaptations may represent an entrepreneurial response to the problems of limited physical access and changing climate, questions remain about the medium- and long-term sustainability of this approach given predicted future energy costs, "acceptable" aircraft noise levels and emission regulations.

We suggest that the Westland Glaciers destination is a good example of "developing resilience". The tourism industry here has been sustained over time despite a range of vulnerabilities (such as changing climate, energy availability/cost, and natural disasters), in large measure because of various resilience factors, including an aptitude to diversify products, community participation in planning and effective disaster response processes (Espiner & Becken, 2014). Hence, this destination does exhibit strong "pockets" of resilience, evidenced by past and current adaptations to risks and challenges facing business operations. Tourism enterprises operating in these environments are accustomed to preparing for and responding to multiple immediate (e.g. floods, road closures and earthquake risk) or slow onset, long-term (e.g. climate change) vulnerabilities (Espiner & Becken, 2014; Orchiston, 2012; Wilson, Stewart, Espiner, & Purdie, 2014). But the setting does not qualify as a "mature" state as resilience is not comprehensive or necessarily coordinated, with some businesses very prepared, and others poorly equipped to respond to change. Furthermore, the degree to which all adaptation behaviour can be considered "sustainable" is uncertain. As noted above, the additional fixed wing aircraft and helicopter flights – an entrepreneurial response to the problem of limited access – increases the destination's vulnerability to increasing energy costs and contributes to a decline in "natural quiet" – a recognised quality of national park attractions (Department of Conservation, 2001). While perhaps "resilient", such strategies could be considered maladaptive and out of alignment with wider sustainability principles.

The West Coast is affected by floods and other perennial hazards that have the potential to result in tourism-reliant communities being isolated by road, and even lead to a complete cessation in the flow of tourists. For instance, in January 2013, heavy rain led to a washout of the Wanganui River bridge to the north of the Franz Josef township. This event halted road transport into the region for six days during the peak tourism season, leading to tens of thousands of dollars in lost revenue (Espiner & Becken, 2014). Similarly, the Haast Pass road (State Highway 6 linking the glacier region to the major tourism hub of Queenstown) was initially closed for 11 days following a large landslide (40,000 cubic metres of rock and debris) in September 2013. The road was not fully functional for 14

months, with travel restrictions and night-time closures throughout this period, seriously inconveniencing both businesses and travellers in the region.

These periods of enforced low tourist activity have the effect of stressing the economic viability of businesses and towns over short periods of time, but also have a number of positive outcomes. First, tourism businesses build flexibility into their systems, to allow for the temporary absence of tourists. Second, they learn to take a bigger picture view of their business model, which means they essentially must adapt to "taking the good with the bad". For glacier tourism operators, this concept is nothing new since poor weather frequently interrupts flight operations (Espiner & Wilson, 2015). However, in the global tourism context these frequent interruptions to business continuity are relatively unique, resulting in West Coast tourism entrepreneurs having a heightened awareness of, and adaptability to, the negative consequences of crises that are largely outside their control (Espiner & Becken, 2014). In this way, Westland Glacier businesses may be among the most adaptive and resilient in the world. However, in contrast, their sustainability hinges on the presence of the glaciers, challenging the long-term viability of these businesses due to climatic factors largely outside their control. Conceptually, this example calls into question the possibility of destinations ever being able to reach the "mature" stage in the model simply because of the significance of the global external forces at play.

At the tourism business level of resilience practice, Orchiston (2012) used scenario planning for a future large Alpine Fault earthquake to demonstrate the risks presented by seismic events, and to identify factors that contribute to enhancing business resilience. Surrogates for resilience were identified and measured amongst tourism operators, including business continuity insurance, disaster and evacuation plans, staff induction and staff training (Orchiston, 2013). A key factor in predicting the use of these resilience "tools" was business size and experience, with the many micro-sized businesses in the region being least likely to utilise any of these mechanisms. There are likely to be a range of reasons for this, including the limited resources and energy micro businesses have to invest in getting prepared, especially for an event which they perceive to be a remote threat. Among the more established businesses are those that have survived past crisis events by developing resilient strategies to adapt to temporary cessation in tourist flows, or periodic low visitation. These pockets of resilience suggest: (1) that there are degrees of resilience across business types, with some clearly in the "developing" category of the model and others "emergent"; and (2) some businesses have large "spheres" of resilient lubrication to drive their ultimate sustainability, and others less so. The collective contribution of these various business resilience profiles towards greater community resilience is unclear, as is whether sustained business enterprise is aligned to the resilience that preparedness implies.

Community cohesion is also strength of the West Coast region, with high perceived levels of sense of belonging, loyalty, expectation of help from neighbours and intention to remain resident in the long term (Orchiston, 2012). Many small tourism-reliant communities around the Southern Alps have established community-driven emergency response plans, which have helped identify and mobilise social capital and available resources. For example, the Glacier Country Tourism Emergency Response Plan is a community-led initiative that uses a range of scenarios to test local resilience, and makes plans that address the impacts of such crises (Orchiston, 2012). In doing so, this community is developing its ability to be adaptive, and building community resilience over the longer term. These bottom-up initiatives have the effect of increasing community-based problem solving and adaptive capacity, creating enhanced resilience and an increased likelihood of sustaining their enterprises into the future. It is here perhaps that the "spheres" of resilience conceptualized in the emerging and developing stages of the model are most clearly observed to intersect with the central theme of sustainability.

New Zealand tourism faces some significant challenges in meeting the test for sustainability (Becken, 2002, 2008b) given its distance from mass markets. Most NBT attractions are peripheral to New Zealand's main centres, requiring additional air and road transport once visitors arrive. For such destinations to be considered truly "sustainable", especially within an environmental context, is

unrealistic and perhaps unhelpful. A range of vulnerabilities and risk factors exacerbate New Zealand's long-term sustainability prospects beyond the resource use conundrum faced by any long-haul destination. The reliance of the New Zealand's tourism product on the stability of global economic and political conditions, alongside its susceptibility to natural hazards and the effects of changing environmental conditions, emphasises the value and relevance of the resilience concept. In the West Coast tourist destination examples, various adaptation measures imply a degree of resilience, yet also serve to illustrate that resilience does not necessarily align with sustainability. In a sustainable tourism context, some of these innovative strategies and resilient practices could be considered unsustainable.

Conclusion

This paper attempts to conceptualise resilience as it relates to the well-established but contentious and elusive concept of sustainable tourism (Higgins-Desbiolles, 2010). In this paper, we present a conceptualization of the complex relationship between resilience and sustainability in NBT destinations (Figure 1), and critique our conceptualization by drawing upon the case of New Zealand's West Coast. In doing so, we conclude that resilience and sustainability are both useful concepts in the study of tourism destinations. These concepts are both complementary *and* distinct. Sustainability emphasises aspirational goals associated with the careful use of resources and ensuring provision for future generations. The fragility of those resources, which may be "public" or common in nature (Heenehan et al., 2015; Ostrom, 2001), and the fact that debate may surround the commitment of common resources to tourism development, lies at the heart of the challenges associated with sustainable tourism. By contrast, resilience is pragmatic and inclusive of a range of responses that may or may not align with sustainability principles. Clearly resilience and sustainability have features that are conceptually similar, but are distinct and, largely (but not necessarily) complementary. Both have been used as lenses to interpret the social, economic and environmental elements of destination communities.

Our conceptual and empirical analyses indicate that it is appropriate that resilience be considered a critical component of sustaining peripheral NBT destinations. In conceptual terms, it seems that destinations might be resilient without being sustainable, but not vice versa. Destinations cannot be sustainable if they are not also resilient. Resilience is, therefore, necessary but not sufficient for sustainability. Resilience planning may be a pragmatic way to frame aspirations for NBT destinations. This reflects a wider recognition that communities need to shift the emphasis of tourism planning from maintaining an unchanging state, to responding to inevitable change (Farrell & Twining-Ward, 2004). For a sector faced with a range of major sustainability challenges (Hall et al., 2015), a resilience approach may be the best way to frame tourism planning and development. It affords deliberate efforts to build capacity to respond to the diverse social and environmental vulnerabilities of peripheral NBT destinations that operate at various scales (Hall, 2007a).

While not yet explicit, it seems increasingly necessary that resilience is considered a critical component of sustainable tourism – inherent in each of the social, economic and environmental elements of tourism development. For NBT destinations to remain viable over time, resilience and the capacity to adapt to changing and unpredictable conditions will be critical (McCool, 2015). Communities, businesses and conservation managers working in NBT settings need to consider a range of mechanisms through which to respond to varied perturbations affecting the socio-ecological tourism system (Farrell & Twining-Ward, 2004). The most commonly identified among these are fluctuations in regional, national and international economic and political stability (Hall, 2004). Perhaps less recognised, but increasingly urgent, are drivers of change such as natural hazards and climate change, which must be addressed in planning for tourism in peripheral destinations. Failure to incorporate resilience measures into sustainable tourism discourse and future planning frameworks, including assessment of sustainable tourism, is to misrepresent the phenomenon of sustainability.

In this sense, perhaps the aim for NBT in peripheral settings should no longer focus on "sustainable" tourism, but rather on "resilient destinations". This, we argue, is a more useful, attainable and relevant goal for peripheral tourism industries. The future research challenge is to develop meaningful indicators of resilience, which may help destinations respond and adapt to changes in ways that sustain their enterprises, their communities and their environment. Empirical studies examining tourism business/community preparedness and responses to multiple vulnerabilities are required to deepen our understanding of perceptions or interpretations of risks and challenges facing tourism communities (especially around earthquakes, energy security and climate change). Becken (2013) highlighted the need for interdisciplinary approaches to future investigations of resilience in tourism systems. Such approaches would suit a longitudinal design.

Sustainable tourism, for decades interpreted as the product of an enduring balance between socio-cultural, economic and environmental demands, is a concept better served by greater acknowledgement of the role played by resilience attributes. NBT destinations cannot be sustainable in the medium- to long-term (20–30 years and beyond) without a high degree of resilience, in the forms of adaptive business practices, including crisis management planning, staff training and induction, and business continuity insurance (Orchiston, 2013). Our conceptual contribution suggests that resilience is an inherent dimension of sustainable tourism and needs to be recognised as such and incorporated, alongside community resilience, in tourism planning processes. It should be noted that the concept of resilience, as we have addressed it, is anthropocentric. Engagement with debates addressing deep green versus utilitarian green approaches offers an avenue of further conceptual development of this field.

Clearly sustainability and resilience are predicated upon fundamentally different world views. Sustainable tourism can imply an absence of change – maintaining the tourism system more or less in its current state over time, while resilience acknowledges complexity, uncertainty and change (Strickland-Munro et al., 2010) and implies adaptation over time (Farrell & Twining-Ward, 2004). Both require informed, acceptable and effective management and governance. As such, resilience may be a more appropriate framework through which to conceptualise tourism in a time of global risks and ecological uncertainties (Young et al., 2015). It also points to some of the fundamental flaws that have rendered sustainability so elusive (Higgins-Desbiolles, 2010). This paper highlights the need for sustainable tourism planning to accommodate resilience in order to (re)focus efforts on coping with ever changing conditions. As such, it must be noted that the fit between sustainability and resilience may be imperfect. Short-term responses to real and perceived vulnerabilities can lead to maladaptive strategies that work against sustainability (Hopkins, 2014, 2015). However, incorporating elements of resilience into destination planning offers the potential to create a realistic foundation upon which the aspirational principles of long-term sustainability might be built. It would also confirm the value of both concepts as distinct, albeit overlapping, lenses through which the tourism system, and the complex and dynamic relationships between business, community and environment, can be better understood.

Disclosure statement

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