



Tourism enterprises and climate change: some research imperatives

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Abstract

The nexus of tourism and climate change is one that has encountered increasing academic interest and exploration by range of disciplines, in particular with prominent contributions made by geographers. Southern Africa is a region that is particularly vulnerable to the long-term impacts of climate change. It is against this background that this paper examines key debates from the growing international literature on climate change in order to identify research imperatives including for African scholars. Arguably, in analysing the potential outcomes and impacts of climate change on the tourism industry worldwide, and specifically the manner in which a number of tourism dependent businesses and by proxy tourism dependent communities and livelihoods may be increasingly vulnerable to climate change related stresses, adaptive actions which aim to reduce or counter such vulnerability become essential. Overall, as argued in this analysis, expanding the research agenda relating to tourism enterprises and climate change and most especially around the need for 'adaptive pathways' is of critical importance for tourism scholarship.

Keywords: Tourism enterprises, climate change, Africa, business adaptation, research agendas

Introduction

In recent years, the study and relationship between tourism and climate change is one that has encountered increasing academic interest and exploration by range of disciplines, with geographers prominent (Hall & Page, 2009; Hoogendoorn & Rogerson, 2015; Hoogendoorn & Fitchett, 2016). Tourism represents a vital sector of the world economy which provides a valuable means of employment and income generation for groups, individuals, communities, regions, countries, and local economies. This global geographic phenomenon is expressed by the provision and consumption of goods and services for tourists located in destinations outside of their usual place of residence overnight and providing a means of direct and indirect employment for a significant number of individuals and their dependants (Hall & Page, 2006). The outcome is that tourism plays a pivotal and underlying role in the local, regional and national economies of tourism destinations, which appear heavily invested and reliant on tourism's continued growth and development (Visser 2007; Visser & Hoogendoorn, 2012; Rogerson & Rogerson, 2017). Climate change is projected to fundamentally alter or undermine the natural resource base upon which many forms of tourism are built and rely. And, in coming face to face with the stark reality of the impacts and outcomes associated with climate change, the majority of tourism based or tourism dependent businesses the world over will all ultimately need to consider and implement some form of relevant adaptation strategy going forward (Becken, 2005; Hall, 2006; Saarinen *et al*, 2012). As one of the largest contributing industries to global warming, the tourism industry has an important role to play in reducing and mitigating environmental impacts in order to avoid extremely dangerous levels



climate change being reached, while still crucially maintaining the growth and profitability that have made the industry such an important source of employment and economic development (Csete & Szécsi, 2015). Furthermore, as the current realities of climate change are unavoidable and continue to unfold as a result of decades of uncontrolled environmental degradation and emissions, the tourism industry will also crucially need to invest in implementing adaptive strategies that seek to safeguard the livelihoods of people employed and active within it from the vast and highly integrated impacts of climate change and the closely related issue of global environmental change (Shakeela & Becken, 2015). In addition, the industry is in search of measures and strategies that aim to improve or maintain the wellbeing of any clientele visiting a particular tourism destination (Bicknell & McManus, 2006). Put simply, the tourism industry and the businesses, communities, and individuals that drive tourist economies throughout the world, at both the level of supply and demand, need to be made aware of the very real risks and impacts associated with climate change and be encouraged to take action, as the current 'business as usual approach' is unsustainable and ultimately dangerous in the long-term (Hall, 2008; Hernandez & Ryan, 2011; Hambira *et al*, 2013).

The region of Southern Africa is particularly vulnerable to the long-term impacts of climate change. Climate change is a major factor impacting upon local economic development futures linked to tourism and South Africa is one of the most vulnerable parts of the world in terms of projected climate change (Hoogendoorn *et al*, 2016; Rogerson, 2016). The observed temperature changes for this region are higher than those increases indicated for other world regions with projections for a 3.4 C increase in annual temperature if comparing the period 1980-1999 with 2080-2099. Ziervogel *et al*. (2014) point out that over the past 50 years mean annual temperatures have escalated by at least 1.5 times global average and that extreme rainfall events have increased in frequency. According to climate scientists the projections are for overall drying across the region of southern Africa, increased rainfall variability, a delay in the onset of the rainy season with an early cessation in many areas; and increased incidence and/or severity of extreme events such as floods, droughts, intense hot spells and wild fires – all with implications for biodiversity, tourism futures, greening of accommodation. The ramifications of climate change for South Africa's tourism economy are becoming starkly evident (Preston-Whyte & Watson, 2005; Steyn & Spencer, 2012). In 2017 Cape Town, South Africa's iconic destination for long haul international travellers especially from Europe and North America, was experiencing its worst drought for a century with the consequences including severe water restrictions for the city's accommodation sector (Wright & Jacobs, 2016). Furthermore, some city planners have suggested that the city of Cape Town may actually run out of water as early as March 2018.

It is against this backdrop that this paper examines key debates from the growing international literature on climate change in order to identify research imperatives including for South African scholars. In terms of the South African experience Rogerson & Visser (2011: 256) early identified that although "there is substantial uncertainty surrounding the long-term implications of climate change for tourism flows, patterns and destinations, these impacts have not been investigated in any depth in Africa", South Africa included. Further, they assert that with regards to future research efforts and agendas that, a "critical area of investigation that can hold much potential for geographers relates to the climate, tourism and development nexus" (Rogerson & Visser, 2011: 256). Likewise, Saarinen *et al*. (2013: 244), regard such research efforts within Southern Africa, as "one of the most urgent issues in context of developing countries, where the impacts of climate change may be very severe in the relatively near future". Moreover, in terms of more specific geographical based research within the realm of tourism adaptation based perceptions studies surrounding the topic of climate change, Vogel (2009: 82) maintains, that there are "very few detailed surveys and assessments that focus on the perceptions, implications, opportunities and challenges". Disconcertingly, few private sector players have "undertaken a serious 'reflection' on adaptation and climate change and the implications of climate risk on overall business strategy and the risk



management environment" (Vogel, 2009: 82). Indeed, given the importance attached to tourism for job creation in South Africa in terms of the country's New Growth Path, and the priorities for sectoral development, it is remarkable that questions about climate change and tourism enterprise adaptation have received so far minimal attention by local tourism scholars.

The Seeming Difficulty of Understanding Climate Change

There exist a significant number of challenges associated with accurately explaining or describing what climate change is, the implications associated with it, and why such a phenomenon requires crucial attention in the form of immediate planning and action (Belle & Bramwell, 2005; Bohdanowicz, 2006; Gössling & Peeters, 2007; Pröbstl et al., 2008). To begin with, some observers have essentially described climate change as "an abstract statistical phenomenon", or more precisely "a slow and gradual modification of average climatic conditions" (Weber, 2016: 125). The phenomenon of climate change was first identified and then communicated by those involved in the physical sciences in the late 1950's and early 1960's (Scott, 2012). Later advancements in atmospheric monitoring and modelling enabled by rapid improvements in technology, effectively made it possible to identify disturbing trends relating to the increased and unnatural heating of the earth's atmosphere which subsequently have been styled as global warming (Njoroge, 2015). The ramifications of global warming are far reaching as knowledge surrounding such concerns continues to increase after having already reached the point of clear validation and legitimacy over the span five decades of dedicated and detailed research (Hall et al., 2014).

This anthropogenic or human induced climate change phenomenon has been shown to be distinctly different from natural causes of variation in the earth climate where modulations in solar radiation or even volcanic eruptions can play a role in raising temperatures (IPPC, 2014). And, instead, refers to the manner in which greenhouse gas emissions created by the combustion of fossil fuels and the uncontrolled deforestation and modification of natural landscapes by the actions of human beings appears to have systematically and significantly altered the earth's variable natural climate (Archer van Garderen et al., 2010). The results are far-reaching and potentially catastrophic for traditionally vulnerable or high risk groups. They will have significant outcomes that may be hard to fathom primarily as a result of the manner in which climate change is able to introduce, and indeed already has introduced new patterns of risk distribution throughout communities and tourist destinations the world over.

For many tourism businesses and policy makers, the challenges presented by climate change to tourism in different geographic locations can be widespread and have outcomes that collectively impact on many levels or aspects of life, from increased thermal discomfort caused by higher average daily temperatures to more intense impacts in areas such as increased crop failures and food shortages as a result of changes in global rainfall distribution and general precipitation patterns (Simpson et al., 2008; Scott & Lemieux, 2010). Within the bounds of such thinking, climate change and the related topic of global warming are significant in that climate change has the capacity to impact on almost every facet of life on earth, and by proxy the tourism industry. The implications of global warming become further pronounced and experienced in areas of particularly uneven development, where high proportions of urban and rural poor, and critically weak levels of coping or adaptive capacity see significant numbers of groups or individuals encounter increasingly difficult levels of stress or difficulty when faced with the outcomes and impacts of climate change (Pelling, 2010).

Nevertheless, the impacts and potential implications of climate change go beyond the realm of traditionally social and economically vulnerable groups and where climate change has been touted to place increased pressure on weak and often underdeveloped areas or fracture points in society (Hall, 2006). As such impacts and outcomes related to climate change are also further projected to also increase the vulnerability of individuals, communities and groups that may not have been considered as previously at risk by introducing completely new patterns of



hazard exposure and sensitivity (Wolfsegger, 2005). This makes the need for recognition of the risks posed and the undertaking of effective and immediate action all the more critical. However, in spite of the undeniable evidence which continues to mount, and increasingly dangerous levels of climate change being reached widespread and meaningful actions continue to be isolated at best and frustratingly elusive (Kaenzig et al., 2016). This is primarily due to the slow and largely ambiguous manner in which climate change and its lesser known or less immediate and dramatic effects are felt and which have blended almost completely unnoticed into people's busy everyday lives.

This "slow creeping threat", with vast impacts and outcomes is highly integrated into almost all process and systems on the planet, making our understanding and experience of climate change extremely difficult to fully perceive, quantify or even explain (Pelling, 2010). Especially this is so when most individuals will never directly experience the full weight and scope of climate change all at once, and instead be exposed to relatively ambiguous indirect impacts of the phenomenon (Dinca et al., 2014). Accordingly, this makes the experience of the phenomena all the more difficult to fully perceive, and as a result, all the more difficult to encourage at risk individuals, groups, communities and organizations the world over to prioritize and take much needed critical action (Wyss et al., 2014; Shakeela & Becken, 2015; Gasbarro & Pinkse, 2016).

Tourism and climate change Impacts: Vector or Victim?

For the tourism industry, the projected climate change related impacts and areas of greatest potential risk, for which adaptive measures may be required are highly diverse (Scott et al. 2012; Gossling et al., 2013). Indeed, they may be heavily influenced by the complex interaction between numerous factors such as geographic location, social, political and economic stability, essential infrastructure, the policy environment that tourism business is located within, tourist perceptions, the natural resource base that tourism businesses may be reliant on, and the global financial outlook of key tourism markets (Adger et al., 2009; Simonsson et al., 2011; Evans et al., 2015).

In seeking to identify specific areas of risk and potential vulnerability, the IPCC (2014) denotes that climate change has far reaching and extensive projected impacts and consequences ranging from unique and already threatened ecosystems in the form of glaciers, forests, ocean ecosystems, to terrestrial ecosystems. All of these represent key tourism resources. Furthermore, such levels of risk and vulnerability related to climate change significantly rise when one considers the impacts and challenges associated with the increasing likelihood of extreme events, the outcome of which are significant and wide reaching in their distribution (Marshal et al., 2011; McKercher & Prideaux, 2011). The recovery from extreme events can be extremely difficult, particularly where infrastructure essential to tourism is damaged and loss of life has been noted. Indeed such occurrences have the capacity to negatively shape tourist perceptions and critically influence tourist numbers at the destination level (Huang & Min, 2002). The competitive nature of the tourism industry world-wide creates a situation whereby there will always be potential alternative experiences available, which in itself encourages and indeed allows certain types of tourists to change their patterns of consumption, and effectively substitute "one destination for another" with little difficulty (Gossling et al., 2006: 420).

Climate change is also projected to indirectly impact on tourism businesses and the social, political and economic environmental context in which tourism takes place at the destination level, by having a critical influence on health, water availability, food systems, and systems of production (Valls & Sardá, 2009). The outcomes may serve to drastically change the tourism landscape within many communities, particularly in areas with high levels of poverty where conflict over access to essential resources is exaggerated by stresses related to climate change (Rogerson, 2016). In addition, they serve further to underline the critical importance



of effective, resilient and purposeful adaptation within tourism, and moreover, by all individuals working within the tourism industry and any related industries. Tourism in island states for example, is projected to be especially at risk or vulnerable to climate change due to “detrimental changes in relation to extreme events, sea level rise, transport and communication interruption” (Becken, 2005: 1). Along with a litany of other issues as saltwater infiltration of ground water supplies, flooding, coral bleaching, and erosion which have the potential to severely disrupt tourism (Marshall et al., 2011). Moreover, highly seasonal and weather or climate related tourism niches as skiing obviously face the impacts of climate change in the face of warming conditions, where established winter seasons may shift and become warmer on average, lack snow during crucial periods (Hoy et al., 2011). Tervo-Kankare et al. (2013) have highlighted that climate change related impacts can even go so far as to disrupt cultural events or holiday seasons as the Christmas holiday period in destinations as Rovaniemi in Finland, where the image sold to tourists has much to do with the notion of the destination as snowy Christmas wonderland. This said, the largest potential impacts of climate change are projected to affect nature-dependent forms of tourism more directly (Hambira et al., 2013). This observation underlines the critical importance of pursuing climate change research for African tourism scholars (Hoogendoorn & Fitchett, 2016; Hoogendoorn et al. 2016)

In most instances depending on the specific types of tourism assets available, climate is generally considered a key tourism resource (Hamilton et al., 2005). This is primarily because “activities and landscape experiences are major tourism attractions” (Rauken et al., 2010: 289). Indeed, climate, “(sun hours, temperature, snow, wind, etc.) is often the main resource upon which a whole series of activities designed to satisfy tourist demand depend” (Gómez Martín, 2005: 576). Lin & Matzarakis (2011: 492) assert that “when tourists experience thermal conditions that are close to their thermal comfort zones, the number of tourists visiting resorts and scenic destinations can increase”. Further, Steyn & Spencer (2012:1) predict that climate more simply “affects the environmental context in which tourism can be undertaken”. This is not to say that climate will directly generate tourism, but that instead, climate along with the positive weather conditions associated with it can help or favour the development of tourism in certain regions that in other circumstances would not be conducive to successful tourism generation (Gómez Martín, 2005).

It is important to note that beyond the increasing levels of risk associated with climate change, and the widespread potential impacts on tourism that the sector is by no means a simple and innocent of victim of climate change. Indeed, tourism occupies a position in which the sector has been recognised as being a significant individual contributor to climate change, and which sees it globally positioned as an industry that is both a victim and vector of climate change (Pang et al., 2013). It has been shown that because large proportions or types of tourism are heavily dependent on relatively stable and enjoyable weather and climate, that climate change and many of the negative impacts associated with it, do in fact pose a direct danger to tourism in certain regions of the world (Gómez Martín, 2005). This is a particular issue for tourism dependent nations and communities located in the global South, where the impacts and consequences of climate change are projected to be the most severe. In essence, the tourism sector is one of the most vulnerable in the world to climate change (Su et al., 2013). Several research investigations have shown tourism to be one of the most robust carbon emitting sectors in the world as well (Pang et al., 2013). Some estimates suggest the tourism industry or sector contributes as much as 5% of all annual global emissions, with such a figure also set to increase as projected international tourist numbers rapidly expand in coming years (Bodansky, 2010).

Hall (2010: 260) cautions that although “tourism can be a mechanism to benefit biodiversity and the maintenance of nature capital, many of the factors linked to biodiversity loss such as land clearance, pollution and climate change are also related to tourism development”. The



aviation industry, often described as tourism's "midwife" has become one of the largest areas of concern for anthropogenic emissions (Vorster & Lutes, 2013). As far back as 1992 the aviation sector was considered to account for up to 2% of all global emissions on its own, a number which in all likelihood has increased subsequently (Gössling et al., 2008). Away from aviation, other highlighted areas of concern may be considered to relate to other forms of transport accessed by tourists while at the destination, the high amounts of energy used in the accommodation sector to cater to tourists needs for the creation and maintenance of a comfortable tourist environment, and the emissions and environmental damage created when building or establishing tourist attractions and developments (Gössling, 2005). In such instances, the construction and development of tourist attractions are considered particularly extensive as natural environments or land is frequently converted for the construction of accommodation establishments and other tourist infrastructure in the form of "airports, roads, railways, paths, trails, pedestrian walks, shopping areas, parking sites, picnicking areas, campsites, summerhouses, vacation homes, golf courses, ports, marinas, ski areas and lifts, as well as the production of food to supply hotels and restaurants, to bury solid wastes, to treat wastewater, and for the production of items needed by this industry" (Gössling, 2005:286). These all play a vital role in adding to the environmental degradation and anthropogenic carbon emissions responsible for global warming, and by proxy climate change.

Due to the uneven geographical impacts of global warming, a number of tourist destinations in the North are set to benefit from increasing temperatures and warmer climates, while many nations in the global South are set to face increased hardship in the form of intensified periods of drought, increasing extreme weather events and uncomfortably high temperatures (Collier et al., 2008). This means that those nations in the global South that have turned to tourism as key or important means of poverty alleviation, job creation, and socio-economic development, now also face the challenge of having climate change or global environmental change undermine the substantial resources invested in encouraging tourism based business development (Steyn & Spencer, 2012). In essence, such economic based 'path dependence' or tourism 'lock in' (Biggs et al., 2012), will have the effect of forcing a number of tourism dependent nations, regions and communities to radically rethink the manner in which they conduct business, as well as how to best overcome the myriad of climate centred challenges they currently face (Brown, 2013). In rethinking the manner in which to best proceed with tourism, the emerging consensus among geographers and other social and economic based disciplines involved in local and regional economic development suggests the need for a move away from previously touted underlying paradigms and frameworks sounding the notion of 'sustainable development'. Instead, the shift is in favour of more flexible and adaptive based frameworks that focus more on the topic of conscious and proactive adaptation and risk reduction relating to climate change (Strickland-Munro et al., 2010).

As the impacts associated with climate change are not evenly or universally spread, many regions and locations require different approaches to dealing with climate change (Morrison & Pickering, 2012; Scott et al., 2012). For example, a number of traditionally cold tourism localities in the global North are projected to benefit in some instances from climate change largely because increasing global temperatures will serve to lengthen or improve annual summer seasons (Breiling & Charamza, 1999). At the same time however, such increases in temperature will also impact negatively on winter based tourist activities in these localities, as declining snow levels and shifting seasonal patterns threaten annual winter tourist arrivals (Carter & Kankaanpää, 2003). In such an instance, it has been observed by geographers involved in local tourism studies that a variety of different adaptation based strategies may be employed by local businesses (Koenig & Abegg, 1997). In the case of relatively fixed snow dependent firms, like ski-resorts and their surrounding tourism dependent enterprises, a commonly touted strategy for poor levels of snowfall has been the acquisition and use of snow making machinery (Scott et al., 2003). Moreover, smaller, less snow dependent firms and enterprises may simply disinvest in winter based tourism service provisions altogether or attempt to expand and diversify into new ranges of product offerings that make use of the



warmer conditions (Lundmark, 2005; Brouder & Lundmark, 2011). Overall, the manner in which such companies attempt to adapt "will, to a large extent, determine the nature and scale of impacts and possibly the companies' survival in the long-run" (Hoffmann et al., 2009: 256).

Local level tourism and climate change related research in traditionally warmer regions of the world reveals that tourist destinations face differing types of challenges when dealing with the impacts and issues associated with climate change. In addition, in many instances various tourism destinations may prioritise completely different aspects of their tourist resources in terms of adaptation. In the case of the Caribbean, Uyarra et al. (2005) identified distinctive differences in the priorities of the tourism destination islands of Bonaire and Barbados, where it was found that tourists in Bonaire "prioritized marine wildlife attributes (i.e. coral and fish diversity and abundance) over other environmental features, whereas tourists in Barbados exhibited stronger preferences for terrestrial features, particularly beach characteristics" (Uyarra et al., 2005: 11). In the case of the Seychelles however, research investigating the perceptions of key tourism firms with regards to global environmental change, showed a largely unified preference towards actions that would maintain the overall image of tourism in the islands of the Seychelles, as primarily being "pristine, and unsullied" (Gössling & Schumacher, 2010: 384).

The limits and barriers to action

The United Nations Climate Change Conference in Paris in 2015 is seen to represent a landmark moment in international and environmental relations. A total of 195 countries entered into a binding agreement that acknowledged the threat posed by human interference with the earth's natural climatic systems and agreed to pursue actions that would critically limit further interference, while also seeking to strengthen global responses to the unavoidable consequences of climate change by encouraging and fostering climate change based adaptation (UNFCCC, 2015). Such an agreement is significant, in that it represents the culmination of decades of research and lobbying that began in earnest in the 1960s, with the clear goal of minimising global temperature rise while also encouraging sustainable growth and development. The 'Paris Agreement' is ambitious in its call for broad and effective climate action (Burlison, 2016). In highlighting the sheer volume of time that such an agreement has taken to be established and the manner in which global emissions have escalated and significantly increased unabated even as the importance of global warming and climate change are realised, some researchers, lobbyists, and policy makers have questioned the practical validity of such an agreement, particularly surrounding the pivotal issue of whether or not such an agreement will ultimately be translated into purposeful and effective climate change related action (Scott et al., 2016). Indeed, a myriad of tourism and climate change related studies appear to support such a position, by critically highlighting that in spite of growing recognition towards climate change politically and socially at the international and national level, that the tourism industry and the businesses that encapsulate it continue to prioritise immediate profitability along with a number of other issues over climate change based action (Bodansky, 2016; Caparrós, 2016; Cléménçon, 2016; Dimitrov, 2016; Morgan, 2016). This is not to insinuate that the current profitability of the tourism industry is not important and is indeed essential, but rather that long-term sustainable and resilient adaptation is also highly important to the future of tourism, and requires investment and prioritisation in the present.

For businesses impacted by climate change, it would appear that most adaptive strategies have focussed mainly on efforts to diversify tourism products or place emphasis on new seasons for tourism, going so far in some instances to changing the location of business firms (Pandy & Rogerson, 2013). In the much documented case of ski-resorts, adaptation based responses also include the introduction of artificial snow as mentioned already. Kajan and



Saarinen's (2012) work surrounding a review of climate change and adaptation in tourism, also critically revealed many businesses lack the adaptive capacity to change. This potentially may have long term consequences for business development surrounding certain tourism localities. The distribution of adaptive capacity within societies, business enterprises and destination regions constitutes a major challenge for the evolution of adaptive strategies to climate change in tourism.

In recent years, however, tourism's dynamic potential to change or adapt to the challenges posed by climate change or global environmental change has become an area of increased academic interest (Scott et al. 2012). Despite its dominance by large often multinational enterprises the tourism industry is mostly composed of small, medium and micro sized enterprises that have been noted for their ability to quickly adapt to changing circumstances or access new potential markets (Hall, 2006). Tourism, as an industry is thought to possess significant potential to accommodate the challenges posed by climate change. In such regards however, it is important to also recognise the significant differences between the challenges facing the nations, communities, and localities of the global or developed North as compared to the global South. For many tourism based businesses (South Africa included) climate change is seen to represent "a new and somewhat daunting topic" (Sussman & Freed, 2008: 1). This is primarily because by their nature, key tourism destinations are geographically fixed, and as such do not have the ability to relocate. Meaning that if tourism destinations are to remain economically, environmentally and socially sustainable, such locations and the businesses located within them will have to pursue adaptive based actions and policies that seek to minimise potential risks (Jones, 2003). Such adaptation centred actions however from a research and policy perspective, do present a considerable challenge. First, as the impacts, severity and spread of climate change is not geographically uniform, the potential impacts and challenges facing various tourism localities and destinations around the world may differ dramatically (Nepal, 2011). This makes specific widespread or universal tourism single adaptation strategies or policies very difficult, and from a practical perspective almost impossible. Second, it is also important to realize that different types of business, along with the relative size of the business involved, may have a significant impact on the types of actions and policies pursued, as well as the general effectiveness of such adaptation attempts (Vogel, 2009). Large tourism based business, for example, may have a distinct advantage over small, medium and micro tourism based enterprises in the sense that large business have better access to knowledge, financial capital, and technology to adapt to the challenges posed by climate change in a particular location (Pang et al., 2013). Nevertheless, in some instances, such large business may in fact be at a distinct disadvantage as compared to their small, medium and micro enterprise counterparts, as far as the constraints posed by having heavily invested in infrastructure within a particular location or destination (Hall, 2006).

A significant issue of concern that has always been close to the issue of climate change and effective tourism adaptation surrounds the highly pertinent question of how to encourage active and conscious adaptation, as decades of research have continuously revealed a lack of urgency on the part of policy makers and individual tourism businesses to take action (Scott et al. 2012). A number of authors have highlighted the need to carry out critical investigations of the general perceptions and understanding of the tourist economy in order to understand the factors or issues that may serve to constrain behaviour (Kajan & Saarinen, 2012). It is argued that regardless of the types of adaptation strategies employed at any level, whether global or local in scale, tourism based perceptions remain a pivotal part of the decision making process in the actions and plans surrounding adaptation to climate change. Such studies have however come to be dominated by research in developed countries in the global North, with relative few studies investigating the perceptions of tourism businesses in the African tourism developmental context (Saarinen et al., 2013).



In considering the broad spectrum of actions that may fall within the realm of adaptation, it is important to note that not all adaptive actions and strategies are entirely sustainable or effective in the long-term (Becken, 2005). It is therefore vital that people are aware of the issue of climate change and the potential long-term consequences of adaptation based decisions, as 'reactive adjustments' can undermine, constrain or negate effective adaptive action. Accordingly, the making of 'purposeful' and carefully integrated adaptive action and policy is very important (Smit & Wandel, 2006). Adaptation based decisions usually do not occur in complete isolation, and in fact more often than not usually "occur in the context of demographic, cultural, and economic change as well as transformations in information technologies, global governance, social conventions and the globalising flows of capital and (to a lesser extent) labour" (Adger et al., 2005: 78). In recognising that throughout history individuals, communities, organizations and even certain forms of governance have previously responded to changes in the planets climate and environment, Adger et al (2005: 77) further denote that in many of these instances the process of adaptation was largely reactionary in the sense that such actions were often 'triggered' by events that forced "some assessment of conditions in the future". Nevertheless, numerous authors have argued that waiting until such time as climate change hazards impact tourism on a significant enough level to take action would be dangerous, in the sense that such events may be beyond the threshold of tourism businesses to adapt without careful and planning and consideration (Becken, 2005).

Adger et al. (2005) suggest that all effective adaptive based actions should conform to one of three 'cornerstones of adaptation' which aim variously to reduce the sensitivity of the system in question to climate change, alter the exposure of the system in question to climate change; and, increase the resilience of the system in question to cope with changes. In order for climate change based adaptation policy to be fully realised and successfully integrated and implemented, such an occurrence will require the buy-in and support of individuals, households, communities and organisations. As such, collectives will ultimately form the base from which decision making in tourism is also made and represent an important segment of the tourism market that will ultimately need to support tourism businesses in future. Wolf & Moser (2011) defines climate change based adaptation as relating to 'adjustments' that may be made to various types of social, political or economic practices, processes, or structures as a result of changing climatic conditions. Furthermore, such adjustments or adaptations are noted to be "highly context-specific" in terms of the social, political and economic locations and contexts in which they may occur (Wolf & Moser, 2011: 23).

Autonomous adaptation involves individuals and communities respond to increasing climatic pressures by undertaking actions without ever taking into account or realising the role of climate change in the particular issue they have encountered (Klein et al., 1999; Smit & Pilifosova, 2003; Füssel, 2007). By contrast, purposeful, resilient and sustainable adaptation requires a critical level of climate change awareness and understanding, which can to a large extent be shaped and influenced by a range of perceptions (Lorenzoni et al., 2007). Such perceptions and in particular an individual's level of risk perception has been touted as playing a significant role in encouraging successful levels of adaptive action, as perception has been shown to fundamentally shape human behaviour (Weber, 2010). This can either encourage or significantly constrain actions Climate change risk perception and policy preferences: The role of affect, imagery, and values (Leiserowitz, 2006). Autonomous adaptation and the actions resulting from a lack of awareness or critical understanding of the climatic based impacts and challenges being faced or encountered can be dangerous (Pelling, 2010). Actions that result from a lack of understanding and the long-term consequences of decision making can easily lead to a number of uncertain outcomes and shape 'adaptive pathways' that are not necessarily sustainable, optimal, or safe. Thus climate change raises a number of critical questions and challenges for the tourism industry as a whole, and the individuals and businesses that form part of the industry. It is therefore highly important that the industry reaches a critical level of awareness, in which the perceptions and understanding of the risks and challenges surrounding climate change are realised, in order to lay the foundation for



effective adaptive actions. In considering adaptive action, Pelling (2012) refers to the importance of 'adaptive pathways', which represent the direction and potential outcomes attached to a particular course of action. The manner in which individuals and groups, in being faced with a particular issue may choose a number of different ways in which to respond to the same stimulus. This can create a situation in which multiple potential outcomes or pathways are in play at any one time. Such a situation, however, does not encourage or inspire long-term resilient collective adaptive action or seek out adaptive pathways that necessarily maximise benefits while minimizing the negative impacts related to climate change. In such an instance Adger et al. (2005) critically highlight the importance of policy and legislative frameworks that seeks to constrain potentially dangerous adaptive options across a number of scales ranging all the way from multilateral frameworks and conventions at an international level, to institutional processes and social norms that constrain adaptive choices and behaviour at national, provincial and local scales. Such work also further denotes that adaptation based decisions usually do not occur in complete isolation, and in fact more often than not usually "occur in the context of demographic, cultural, and economic change as well as transformations in information technologies, global governance, social conventions and the globalising flows of capital and (to a lesser extent) labour" (Adger et al., 2005: 78).

Conclusion: Research Imperatives

In considering the potential outcomes and impacts of climate change on the tourism industry worldwide, and specifically the manner in which a number of tourism dependent businesses and by proxy tourism dependent communities and livelihoods may be increasingly vulnerable to climate change related stresses, actions which aim to reduce or counter such vulnerability become essential. The outcome may be considered to fall under the central notion relating to adaptation, which is proposed to relate to any "adjustment in natural or human systems in response to actual or expected climatic stimuli or their effects, which moderates harm or exploits beneficial opportunities" (Houghton et al., 2001:72). Such adaptation based actions are by their nature multifaceted, and can in fact be made "manifest in a number of ways" (Adger et al., 2005). One of the greatest challenges facing climate change adaptation planning relates to the important realization that climate change based risk and vulnerability does not exist in isolation from broader socio-economic ills. And though many may identify with climate change at a broad global and national level, it is important to realise that "adaptation is contextual and local" (Eakin et al., 2014: 1).

Globally, the tourism industry has been under critical scrutiny for its short-term profit orientation and lack of meaningful actions regarding climate change (Hall & Higham, 2005; Jenkins & Nicholls, 2010). Nevertheless, as pointed out by Ruhanen and Shakeela (2013) continued empirical research examining the tourism industry's perspectives concerning climate change is vital, particularly when considering the relative significance of climate change as required by the industry to facilitate mitigation and adaptation strategies. Moreover, existing international research discloses that while the tourism industry in many countries is aware of the significance and potential ramifications of climate change, it is not considered a pressing issue, not the least since the impact of the global economic crisis (Ruhanen & Shakeela, 2013). Becken and Wilson (2013: 1) argue, that while interest in "the interactions between climate, weather and tourism has increased markedly in the last decade in response to climate change concerns", there remains a great deal of research to still be done. This is not only because of the urgent need to "enhance the visibility of science" (Walther et al., 2005: 649), but also because as Nordas and Gleditsch (2007) conclude, the gaps in our knowledge with regards to climate change continue to be "daunting". Kuruppu et al. (2013: 11) in particular highlight the key area of tourism adaptation and the need for small, medium and micro enterprise research by stating that much "has been written about how climate change will



affect the physical environment and how governments and local communities should respond. However, the responses of small and medium enterprises (SMEs) have not received the same attention. As a result, the need to plan for future climate impacts and the need to assess their adaptive capacity have been neglected. This view is endorsed by other authors such as Leszczynska (2012: 500) who emphatically state that from a "theoretical point of view, while existing research on firm adaptation has been concerned with various forms of firm adjustment to competitive environments, researchers have only just begun to investigate the capacity of businesses to adapt to climate change impacts". Overall, Scott et al. (2010: 19) estimate that "climate adaptation research in the tourism-recreation sector is 5–7 years behind that of sectors that have been actively engaged in adaptation research". Anantram and Noronha (2005) suggest that one possible reason why adaptation research regarding climate change and its associated impacts has until recently received so little attention compared to mitigation research may have much to do with possible underlying fears that by doing so, such actions may be paramount to surrendering the fight against anthropogenic pollution, climate change and the championing of mitigation legislation and actions. Nevertheless, Jopp et al. (2010: 592) suggest that such fears are completely unfounded, and that adaption should instead be viewed "as necessary and complementary to mitigation efforts".

One further issue for investigation within the realm of tourism adaptation and climate change studies is highlighted by such authors as Becken and Hart, 2004, Gómez Martín (2005), Brouder and Lundmark (2011), Ruhanen and Shakeela (2013), and Saarinen et al. (2013). This research imperative involves the undertaking of specific studies that seek to examine and incorporate the views or perceptions of key tourism industry stakeholders with regards to the issues of climate change and potential adaptation undertakings. In the view of Gómez Martín, (2005: 578) "most innovative studies on climate and tourism are those that examine how the industry should be adapted in the future and those that emphasize this as a key consideration in planning projects" (Gómez Martín, 2005: 578). Indeed, because "debate mostly takes place at an academic level and rarely in the arena of policy makers and key tourism stakeholders. It is therefore unclear to what extent tourism stakeholders recognize the importance of climate change for their industry, and whether they are interested in particular mitigation actions" (Becken & Hart, 2004: 199). Overall, as argued in this analysis, expanding the research agenda relating to tourism enterprises and climate change and most especially of adaptive pathways is of critical importance for tourism scholarship, including South Africa.

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