Journal of Sustainable Tourism

ISSN: 0966-9582 (Print) 1747-7646 (Online) Journal homepage: http://www.tandfonline.com/loi/rsus20

Editorial: Tourism and its Interactions with Climate Change

David Viner

To cite this article: David Viner (2006) Editorial: Tourism and its Interactions with Climate Change, Journal of Sustainable Tourism, 14:4, 317-322

To link to this article: http://dx.doi.org/10.1080/09669580608669064

Editorial
Tourism and its Interactions with Climate Change

David Viner
Climatic Research Unit, University of East Anglia, Norwich, UK

Anthropogenic climate change is increasingly recognised as a major threat to large sections of both society and the environment. The overwhelming majority of the peer-reviewed literature as reported by the Intergovernmental Panel on Climate Change (IPCC) supports the view that there is a discernible human influence on the climate system (IPCC, 2001a). This statement will be reinforced with the publication of the IPCC Fourth Assessment Report (AR4) in 2007. The studies undertaken by climate scientists have shown that it is not only the magnitude of changes which are increasingly unprecedented but also the rate of those changes. Although there may appear to be contrary views to the consensus of the IPCC, these are few in number, often fragmented, inconsistent or cannot be supported by scientific evidence.

It has also been known, anecdotally, for some time that tourism is closely linked to climate, in terms of the climate of the source country of tourists (e.g. the perception of unreliable summers in, for example, northern Europe), the destination country for tourists (e.g. the perception of reliable summers in the Mediterranean) and climate seasonality (the seasonality contrast that drives demand for summer vacations in the Northern Hemisphere). It was not, however, until work by Lise and Tol (2002) that a scientific basis for this link could be described. It has also been well documented that at local, regional and global scales tourism is an economically very significant industry for which forecasts show increasing growth.

Since the late 1980s there has been a considerable amount of research undertaken by scientists examining the potential impacts of climate change upon many sectors of the environment and society. This research has been reviewed and reported by Working Group II of the IPCC (1990, 1995, 2001b). Much of this work has concentrated upon single sector studies (e.g. climate change and its impacts upon hydrology or agriculture) or single species or ecosystem types. Integration of the impacts across multiple sectors within a region was originally confined to desktop analysis and subsequent reports. Examples of these include: UK Climate Change Impacts Review Group (CCIRG, 1991); the United States National Assessment (National Assessment Synthesis Team, 2000) and the EU funded ACACIA Project (Parry, 2000). When reviewing the significant volumes of literature on climate change and its impacts it soon becomes clear that there has been very little emphasis or research on climate change and tourism. For example, there has been a plethora of research undertaken on the impacts of

0966-9582/06/04 0317-06 $20.00/0
JOURNAL OF SUSTAINABLE TOURISM

Vol. 14, No. 4, 2006

climate change on agriculture in the UK. The UK agricultural industry accounts for less than 2% of UK GDP. For tourism and climate change studies, research is confined to a limited number of Masters projects (e.g. Jenkins, 2005), yet tourism accounts for some 10% of the UK's GDP.

Climate Change and Tourism Research

To date there has been little research undertaken on the impacts of climate change on tourism and this has resulted in the publication of only a small volume of peer-reviewed research. Early papers published on the issue of climate change and tourism addressed the North American Ski Industry (McBoyle & Wall, 1992) and small islands (Wall, 1998). During the 1990s, however, while the climate change impacts research community underwent major expansion, research on tourism and climate change remained limited. One of the identifiable reasons for this is that while some sectoral researchers, such as those in agriculture, embraced the concept of wider global and environmental change, the traditional tourism research community did not. It can also be attributed to the fragmented nature of the tourism policy communities in those countries that funded the majority of the research on climate change, primarily the United Kingdom, the Netherlands, Finland, United States, Canada and Australia.

The first assessment of the global consequences of climate change and its impacts on tourism that appeared was based upon research commissioned by the World Wide Fund for Nature (WWF) in 1998, with the report released in 1999 (Viner & Agnew, 1999). This research was presented at the Millennium Tourist and Hospitality Conference at the University of Surrey, January 2000 and subsequently published in 2001 (Agnew & Viner, 2001). Over 200 papers were presented at this conference which was designed to examine how tourism would change during the 21st century, yet only two examined how tourism would be impacted by environmental and climate change. The tourism research community, preoccupied with parochial discussions (such as defining ecotourism), continued to overlook the wider concerns of climate and environmental change and their impacts upon tourism.

During the spring of 2003 two separate initiatives took place, both designed to look at the impacts of climate change on tourism. A European Science Foundation (ESF) funded workshop was held in Milan in June 2003, which for the first time brought together the identifiable scientists from the international community who were investigating components of the interactions between climate change, tourism and the environment. This workshop formulated a scientific plan, a strategy for awareness raising and a network (eCLAT, www.e-clat.org) for the research community (Viner & Amelung, 2003). In April 2003 the World Tourism Organisation (WTO) held their Inaugural Conference on Climate Change and Tourism (WTO, 2003). There has, however, yet to be a follow-up. Both of these meetings helped to raise awareness of the issue, among the scientific community (including the IPCC) and the stakeholder and policy communities.

Since these two meetings there has been a noticeable (although still relatively small) increase in the number of papers that have been published and the number of research projects underway. The majority of chapters in the AR4 of the IPCC Working Group II have addressed tourism to an extent. Although the

majority of impact studies are sector based, the study of the impacts of climate change and tourism allows for an integrated approach from the outset. Tourism as an industry cross-cuts most economic sectors and greatly influences the environment surrounding tourism destinations. This Special Edition of the *Journal of Sustainable Tourism* presents for the first time a series of coherent linked papers that brings together the issues surrounding the interactions between climate change and tourism.

The Papers

One of the key findings and strategies adopted by the scientists involved in the ESF Workshop in Milan (Viner & Amelung, 2003) and eCLAT Network was to maintain that scientific investigations into climate change and tourism should bear in mind the complex net of interactions between climate change tourism and the environment. The aims, therefore, of this Special Edition are: to describe the issues that surround climate change and the interactions with tourism and the environment, to examine the results of the research that have been performed to date in this area, and to present a future research agenda.

Signatories to the United Nations Framework Convention on Climate Change are required to produce a National Green House Gas (GHG) Inventory. Tourism, through associated emissions of GHGs, is a major contributor to climate change. Tourism, however, is not included as a component of the National GHG Inventory. As a result, there are no comprehensive statistics on emissions or energy demand specifically resulting from tourism. In order, therefore, to quantify a country's tourism emissions there is a requirement to establish the methodology required to assess this.

The first paper in this Special Edition, by Susanne Becken and Murray Patterson, identifies two approaches to accounting for GHG emissions from tourism. First, a bottom-up analysis is discussed, involving industry; secondly, a top-down tourism analysis is described using environmental accounting. This paper uses New Zealand as a case study example. Although New Zealand is a relatively small country in terms of global tourism, its impacts are somewhat skewed by its dependency upon tourist arriving on long-haul air travel. This does highlight some irony in New Zealand's current advertising claim of '100% Pure New Zealand'. The paper demonstrates that both approaches result in similar estimates of the degree to which tourism contributes to national carbon dioxide emissions. However, the approaches differ in the way in which the results can be used. The bottom-up approach allows the results to support targeted climate change reduction strategies. The top-down approach allows GHG emissions from the tourism sector to be compared with other economic sectors.

Supporting the argument that the study of tourism and its interactions with climate change and the environment provides a unique integrator, the second paper, by Trista Patterson *et al.*, builds upon the output of a NATO funded workshop (Amelung & Viner, 2004). The approach and reasoning behind two central conceptual diagrams relating tourism and climate change is described. The first diagram describes a typical polarisation in tourism and climate change knowledge management. A new strategic conceptual model is described to support long-term non-territorial collaboration, and to overcome the mindset that

adaptation and mitigation are mutually exclusive. Finally, the paper addresses the paradox that a relatively small cross-section of the human population is driving demand for the decreasing tourism resource and is also disproportionately responsible for increased GHG emissions and enhanced climate change.

The annual migration of northern Europeans to the Mediterranean during a relatively confined summer season is one of the longest-established major movements of international tourists. The third paper, by Bas Amelung and David Viner, examines how climate change will impact upon the suitability of the Mediterranean for tourism during the 21st century. By using a Tourism Comfort Index (TCI) the paper shows a decline in the suitability of the Mediterranean for tourism during the productive summer season while in parallel the suitability for tourism of the source countries in northern Europe improves. The use of the TCI may be subject to argument, but it does, however, provide a unique indicator for the assessment of climate change impacts on tourism at a regional scale. The European heatwave of 2003 provided for the first time an indication of a climate event that can be attributable to climate change (Schar, 2004); there does need to be, however, a quantitative assessment to support anecdotal evidence that the tourism industry across Europe was impacted.

The fourth paper, by Allen Perry, develops anecdotal evidence to provide a quantifiable indication of the impacts of the 2003 European summer heatwave on tourism in the Mediterranean. The conclusion illustrates that the Mediterranean region is becoming less sustainable both economically and environmentally for tourism. Significant climate changes can be expected to occur during the lifetime of many current tourism investment projects (e.g. golf course and marina developments). The change in the nature and frequency of extreme events is likely to be more important than the tourists' perception of gradual increases in temperature. The European summer of 2003 provides a unique insight into what climate change holds for the future.

During the 1990s a number of research papers had addressed the impacts of climate change on the European (e.g. Abegg *et al.*, 1998; Viner & Agnew, 1999) and North American ski industries (e.g. MacBoyle & Wall, 1992). These papers addressed the sustainability of the ski industry as a result of climate change.

The fifth paper, by Daniel Scott *et al.*, using North America as a case study, addresses the role of snow making in an adaptive capacity to help sustain the ski industry in areas that are vulnerable to climate change. This paper examines how snow making reduces the vulnerability of ski areas to climate change in six study areas. The results suggests that the adoption of snow making infrastructure could help climate-proof certain sections of the ski industry. One, however, does have to take into account other issues when looking at the sustainability of the use of snow making; for example, water supply and water resource issues, energy consumption, and the sources of the energy supply for the snow cannons.

The final paper, by Ghislain Dubois and Jean-Paul Ceron, builds upon the research outputs and agendas of the ESF and NATO Workshops mentioned earlier. The key suggestion here is that those involved in tourism and climate change research should bring in expertise from a wide range of disciplines and address the issues at a global scale. The tourism sector provides a unique integrator for bringing together facets from all socioeconomic sectors across all scales.

Success in bringing this partnership to fruition will come from developing and enhancing the existing eCLAT network on an inclusive and global basis.

Conclusion

This Special Edition of the *Journal of Sustainable Tourism* presents for the first time a series of integrated papers that address the interactions between climate change, tourism and the environment. It has been designed to outline the history behind the research involved, the current state of knowledge in this area and to help galvanise the wider scientific research community (especially those from traditional tourism fields) into looking at the issues. This volume, and other reports and papers mentioned here, have also been produced with the policy and stakeholder communities in mind. Tourism and climate change has been overlooked because the policy community is fragmented. The research agencies cannot address the cross-cutting inter-disciplinary nature of climate change and tourism research. The stakeholders, predominantly SMEs, perceive climate change as only a long-term problem. Although this latter point may be correct for certain regions and sectors, the impacts of climate change mitigation policies may be felt in the very near term.

Correspondence

Any correspondence should be directed to Dr David Viner, Climate Research Unit, University of East Anglia, Norwich, NR4 7TJ, UK (d.viner@uea.ac.uk).

References

Abegg, B., Konig, U., Buerki, R. and Elsasser, H. (1998) Climate impact assessment in tourism. *Applied Geography and Development* 51, 81–93.

Agnew, M. and Viner, D. (2001) Potential impacts of climate change on international tourism. *International Journal of Tourism and Hospitality Research* 3, 37–61.

Amelung, B. and Viner, D. (eds) (2004) *Proceedings of the NATO Advanced Research Workshop: Tourism and Climate Change: Assessment and Coping Strategies.* Warsaw: NATO.

Climate Change Impacts Review Group (CCIRG) (1991) *The Potential Effects of Climate Change in the United Kingdom*. London: HMSO.

Lise, W. and Tol, R.S.J. (2002) Impact of climate on tourist demand. *Climatic Change* 55 (4), 429–49.

IPCC (1990) *Impacts Assessment of Climate Change – Report of Working Group II.* W.J. McG Tegart, G.W. Sheldon and D.C. Griffiths (eds). Australian Government Publishing Service.

IPCC (1995) *Climate Change 1995: Impacts, Adaptations and Mitigation of Climate Change: Scientific-Technical Analyses Contribution of Working Group II to the Second Assessment of the IPCC.* R.T. Watson, M.C. Zinyowera and R.H. Moss (eds). Cambridge: Cambridge University Press.

IPCC (2001a) *Climate Change: The Scientific Basis WG1 Contribution of Working Group I to the Third Assessment Report of the IPCC.* J.T. Houghton, Y. Ding, D.J. Griggs, M. Noguer, P.J. van der Linden and D. Xiaosu (eds). Cambridge: Cambridge University Press.

IPCC (2001b) *WGII Climate Change 2001: Impacts, Adaptation and Vulnerability Contribution of Working Group II to the Third Assessment Report of the IPCC.* J.J. McCarthy, O.F. Canziani, N.A. Leary, D.J. Dokken and K.S. White (eds). Cambridge: Cambridge University Press.

Jenkins K. (2005) An assessment of the impacts of climate change on tourism: Businesses in Torbay, Devon with regards to future adaptation and mitigation policy responses. Unpublished MA Thesis, Climatic Research Unit, University of East Anglia.

McBoyle, G. and Wall, G. (1992) Great Lakes skiing and climate change. In A. Gill and R.

Hartmann (eds) *Mountain Resort Development* (pp. 70–81). Burnaby, Canada: Centre for Tourism Policy and Research, Simon Fraser University.
National Assessment Synthesis Team (2000) C*limate Change Impacts on the United States: The Potential Consequences of Climate Variability and Change*. US Global Climate Change Research Program. Cambridge University Press.
Parry, M.L. (ed.) (2000) *Assessment of the Potential Effects and Adaptations for Climate Change in Europe: The Europe ACCACIA Project.* Norwich: University of East Anglia.
Schar, C., Vidale, P.L., Lathl, D., Frei, C., Haberli, C., Liniger, M.A. and Appenzeller, C. (2004) The role of increasing temperature variability in European summer heatwaves. *Nature* 427, 332–6.
Viner, D. and Agnew, M. (1999) *Climate Change and its Impacts on Tourism*. Report Prepared for WWF-UK, Godalming.
Viner, D. and Amelung, B. (2003) Climate change, the environment and tourism: The interactions. *Proceedings of the Esf-Lesc Workshop, Climate change, the Environment and Tourism: The Interactions*. Milan, 4–6 June.
Wall, G. (1998) Implications of global climate change for tourism and recreation in wetland areas. *Climatic Change* 40 (2), 371–89.
WTO (2003) *Climate Change and Tourism, Proceedings of the 1st International Conference on Climate Change and Tourism.* Djerba, Tunisia, 9–11 April.

doi:10.2167/jost705.0