Resource Guide to Climate Change Issues in Tourism and Leisure

INTRODUCTION

Climate change will affect all aspects of the economy and the tourism and leisure industries are no exception. Tourism and leisure are both potentially climate sensitive sectors and are likely to be affected by changes to the climate in the future.

As climate change is now at the fore of both national and international government agendas it is imperative the tourism and leisure industries are aware of climate change issues and policy implications. There is growing awareness of these issues within the tourism industry where the greenhouse gas (GHG) emissions produced by flying and the impact of changing climate are a cause for concern. This has triggered a recent wave of research examining:

- Levels of GHG emissions associated with travel.
- Accommodation and activities.
- Industry and tourist understanding of the issues.
- Mitigation and adaptation strategies.

The leisure industry has been slower to respond as it has often been thought of as a ‘green’ industry with relatively low environmental impacts. While this might be the case when compared to the traditional manufacturing sector in the UK, it is now recognised that leisure might not be so benign.

Leisure travel is a key contributor to GHG emissions but there are also a variety of carbon intensive leisure activities that will come under the climate change spotlight together with climate sensitive activities and products. To date, cost has been a key driver for change within both the tourism and leisure industries. Cost is likely to continue to be a driver, however, regulation will play an increasing role.

Given the political weight now given to the topic, future graduates will be expected to have a solid understanding of climate change policy, mitigation
strategies and adaptation practices. The topic is currently covered in tourism and leisure degrees within current issues units and, increasingly, within units dedicated to climate change.

The intention of this resource guide is to direct tutors, students and researchers to key resources on climate change specifically focused on the tourism and leisure industries and their unique attributes. Given the emerging nature of climate change, much of the literature on this topic is based in research journals rather than text books. Therefore the content of some of the material listed in this resource guide may be more appropriate to final year undergraduate and postgraduate students rather than first and second year undergraduates. However, there are a growing number of reports and text books which provide a more accessible introduction. Key texts are listed in the following section and provide an accessible resource for undergraduate students.

OVERVIEW OF CLIMATE CHANGE AND THE IMPLICATIONS FOR LEISURE AND TOURISM

Climate change can be defined in different ways but essentially refers to:

> “any change in climate over time, whether due to natural variability or as a result of human activity” (Intergovernmental Panel on Climate Change (IPCC) 2007).

The IPCC now state “warming of the climate system is unequivocal” and there is very high confidence that this is due to the net effect of human activities. Globally, the average temperature has risen by 0.7°C over the last 100 years and mid-range estimates project a 2-3°C rise this century (Met Office 2008). The driver for this change is GHG production predominantly due to the burning of fossil fuel although this is not the only factor. CO₂ is the most important anthropogenic GHG (IPCC 2007).

Climate change impacts are many and varied but include the rising of sea levels and changes to wind, temperature and precipitation patterns. These changes are likely to have a differentiated effect with greater impact in some regions of the globe and on some activities.

Tourism is a sector particularly vulnerable to climate change due to its dependence on the environment and climatic conditions. Leisure, on the other hand, is less likely to be directly affected although there are activities with a similar dependence on resource conditions that may change. However, both sectors are likely to be affected indirectly as both tourism and leisure industries contribute GHG emissions which cause climate change. Thus they are part of the problem and climate change mitigation measures will therefore impact on both industries. So, to sum up, the issues for tourism and leisure are three fold and interrelated:

1. Climate change will directly affect the tourism and leisure resource base.
2. Tourism and leisure are part of the problem and a cause of climate change.
3. Climate change mitigation measures will impact tourism and leisure activities indirectly through regulatory processes and fiscal measures.

ANNOTATED BIBLIOGRAPHY

Much of the material published on climate change is to be found outside of tourism and leisure journals. The following resources provide an excellent overview of the tourism issues for students. There are presently no similar texts focusing on leisure but students of leisure should also be able to gain relevant insight from the following:

A comprehensive text book setting out the issues for tourism. Chapters cover:

- The Tourism-Climate System;
- Case-studies of the Tourism-Climate System;
- An Overview of Tourism; Global and Regional Climate Change;
- Methodologies for Greenhouse Gas Accounting;
- Climate Change Mitigation Measures;
- Climate Change-related Risks and Adaptation;

This edited book provides an excellent overview of the issues. The wide range of material covered and the range of contexts throughout the world makes it a good text for students and for lecturers developing teaching on tourism and climate change. The text is divided into three sections. The first examines key environments and global environmental change. Chapters cover:

- The impacts of global environmental change on tourism in the polar regions (Margaret E. Johnston);
- Global environmental change and mountain tourism (Daniel Scott);
- Lakes and streams (Brenda E. Jones, Daniel Scott and Stefan Gössling);
- Tourism and forest ecosystems (Stefan Gössling and Thomas Hickler);
- The coastal and marine environment (Stephen J. Craig-Smith, Richard Tapper and Xavier Font);
- Deserts and savannah regions (Robert Preston-Whyte, Shirley Bbrooks and William Ellery);
- Tourism urbanisation and global environmental change (C. Michael Hall).

The second section focuses on global issues with chapters covering:
• Tourism, disease and global environmental change: the fourth transition? (C. Michael Hall);
• Tourism and water (Stefan Gossling);
• Extreme weather events (Chris R. Defreitas);
• Tourism, biodiversity and global environmental change (C. Michael Hall).

The third section addresses stakeholder adaptation and perceptions with chapters on:

• The role of climate information in tourist destination choice decision making (Jacqueline M. Hamilton and Maren A. Lau);
• Restructuring the tourist industry: new marketing perspectives for global environmental change (Szilvia Gymothy);
• US ski industry adaptation to climate change: hard, soft and policy strategies (Daniel Scott);
• The example of the avalanche winter 1999 and the storm Lothar in the Swiss Alps (Christian J Nöthiger, Rolf Bürki and Hans Elsasser);
• Tourists and global environmental change: a possible scenario in relation to nature and authenticity (Erika Andersson Cederholm and Johan Hultman).

An edited book with chapters authored by many of the key people in the field.

Part 1 sets the context with chapters covering:

• The climate-tourism relationship and its relevance to climate change impact assessment (C.R. de Freitas);
• The evolution of the climate change issue in the tourism sector (Daniel Scott, Geoff Wall and Geoff McBoyle).

Part 2 considers the effects of climate change on tourist flows and recreation patterns with chapters on:

• Climate and policy changes: their implications for international tourism flows (Sue Mather, David Viner and Graham Todd);
• The Mediterranean: How can the world’s most popular and successful tourist destination adapt to a changing climate? (Allen Perry);
• Greenhouse gas emissions from tourism under the light of equity issues (Ghislain Dubois and Jean-Paul Ceron);
• Climate change and tourism and recreation in North America: exploring regional risks and opportunities (Daniel Scott, Geoff Wall and Geoff McBoyle);
• Nature tourism and climate change in Southern Africa (R.A. Preston-Whyte and H.K. Watson);
• Changing snow cover and winter tourism and recreation in the Scottish Highlands (S.J. Harrison, S.J. Winterbottom and R.C. Johnson);
• Climate change and tourism in the Swiss Alps (Rolf Bürkis, Hans Elsasser, Bruno Abegg and Urs Koenig);
• Effects of climate change on tourism demand and benefits in Alpine areas (Robert B. Richardson and John B. Loomis);
• Implications of climate change on tourism in Oceania (Stephen Craig-Smith and Lisa Ruhanen);
• Tourism, fossil fuel consumption and the impact on the global climate (Susanne Becken and David G. Simmons).

Part 3 covers adaptation and response with chapters on:

• Tourism and climate change adaptation: the Norwegian Case (Carlo Aall and Karl G. Høyer);
• Tourism and the ozone hole: varying perceptions (L. Michael Trapasso);
• ‘Everyone talks about the weather’ (Keith Dewar);
• Climate change, leisure-related tourism and global transport (Paul Peeters); Sustainable mobility and sustainable tourism (Karl G. Høyer and Carlo Aall); Tourism as victim, problem or solution: story lines of a complex industry-environment relation (Lotta Frändberg);
• Tourism’s contribution to global environmental change: space energy, disease, water (Stefan Gössling);
• Making tourism sustainable: the real challenge of climate change? (James Higham and C. Michael Hall).

An edited book with sections focusing on appropriate methods and data to assess climate change impacts, approaches to reduce greenhouse gas emissions and mitigation policies.

Section I: Methods and data includes:

• Air transport greenhouse gas emissions (Paul Peeters, Victoria Williams and Stefan Gössling);
• The environmental impacts of tourism in Antarctica: A global perspective (Machiel Lamers, Bas Amelung);
• Sustainable tourism mobility: the social practices approach (Desiree Verbeek and Hans Mommaas).

Section II: Reducing greenhouse gas emissions includes:

• Compensation schemes for air transport (Bart Boon, Arno Schroten and Bettina Kampman);
• Mitigation of climate impacts with innovative air transport management tools (Victoria Williams, Robert Noland, Arnab Majundar, Ralf Toumi and Washington Ochien);
• Long distance travel in Europe: the potential of the train (Cornelis Dirk van Goeverten);
• The role of scheduled buses in reducing car journeys in tourist areas (Jo Guiver, Les Lumsdon and Kate Morris);
• Mitigation opportunities in Portugese hotels under a warming climatic trend (Ricardo Aguiar, Tiago Lourenço, Elsa Casimiro, Hélder Conçalves and Filipe Santos);
• Greenhouse gas emissions reduction by target group tailored holiday offers (Ulrike Rheinberger, Martin Schmied and Konrad Götz).

Section III: Policies for mitigation includes: ‘Not my main priority’:

• Tourism entrepreneur attitudes and behaviours with respect to climate change adaptation and mitigation (Michael Hall);
• Can domestic tourism growth and reduced car dependency be achieved simultaneously in the UK? (Derek Robbins and Janet Dickinson);
• How heavy will the burden be? Using scenario analysis to assess future tourism greenhouse gas emissions (Ghislain Dubois and Jean-Paul Ceron).

A recent report for the United Nations Environment Programme. Chapters cover: Background to climate change and tourism; Key knowledge gaps related to developing countries and small island states; Adaptation; Mitigation; Plan for the way forward and challenges ahead.

Students can also be directed to two key reports on climate change both of which have non-technical summaries. Neither address tourism and leisure specifically but both provide relevant background to climate change issues:

Intergovernmental Panel on Climate Change (IPCC), 2007. IPCC Fourth Assessment Report
Available at: http://www.ipcc.ch/
Very comprehensive but also very scientific material examining observed climate change, causes of change, projected impacts and adaptation and mitigation options. The summary document available at the same web URL would probably cover most student needs.

Available at: http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm
For general reading and viewing students will find Al Gore’s book and film useful:


*An Inconvenient Truth*, 2006. Film, directed by Guggenheim D. USA, Paramount Home Entertainment

In recognition of the implications of climate change for tourism two international conferences have been organised by the World Tourism Organization (WTO).

1. The first took place in 2003 in Djerba, Tunisia and resulted in the Djerba Declaration on Tourism and Climate Change.

2. The second took place in 2007 in Davos, Switzerland and resulted in the Davos Declaration.

Reports are available detailing the main conclusions and agenda for action derived from these conferences:


**INTERNATIONAL AND NATIONAL CLIMATE CHANGE POLICY DIRECTIONS WITH IMPLICATIONS FOR TOURISM AND LEISURE**

To date tourism and leisure industries have only been indirectly affected by policy decisions related to climate change. The *United Nations Framework Convention on Climate Change*, agreed at the Earth Summit in Rio de Janeiro in 1992, was the first international agreement on climate change. The aim was to stabilise greenhouse gases in the atmosphere to avoid dangerous climate change but the commitment to reduce greenhouse gas emissions was non-binding.

This was followed by the *Kyoto Protocol* in 1997 which was ratified by over 166 countries and became legally binding in 2005. The EU agreed to meet a joint target of an 8% reduction in greenhouse gas emissions below 1990 levels by 2012 with greater and lesser targets allocated to different member states to meet the overall reduction. Since the Kyoto Protocol was not ratified by a number of countries, most notably the United States, the Bali Climate Change Conference in December 2007 launched negotiations for a more
comprehensive global agreement to be concluded in 2009 at the UN Climate Change Conference in Copenhagen (Department for Environment Food and Rural Affairs 2008).

In the UK a Climate Change Bill was introduced in 2007 and is due to receive Royal Assent in 2008. The Bill sets a target to reduce the UK’s CO₂ emissions by at least 60%, on 1990 levels, by 2050. This legislation will indirectly impact on the leisure and tourism industry through fiscal measures, technological adaptations and energy policy (Department for Environment Food and Rural Affairs 2008). The Department for Business Enterprise and Regulatory Reform (2008) has charted CO₂ emissions since 1990 by sector. Data for the service sector includes tourism and leisure.

UK and international legislation and regulation relating to climate change is gathering pace. The following are examples of relevance to the leisure and tourism industry at the current time (2008). Further regulation is likely to emerge in coming years.

1. **Emissions Trading Scheme (EU ETS)** - As part of the process of reducing emissions the EU introduced EU ETS in 2005. To date this has had no direct implications for tourism or leisure industries however, in December 2006 the EU Commission proposed the inclusion of aviation in the EU ETS. Within the proposal, emissions from all domestic and international flights between EU airports will be covered from 2011 with expansion to all international flights arriving or departing from an EU airport from 2012. This is proposed as a model for wider, global action (European Commission 2008). The inclusion of aviation within the EU ETS has implications for tourism travel although the impact will not be clear for some time.

2. **The EU Directive on Energy Performance of Buildings** has implications for energy conservation in hotels. This is being implemented over 2008 and 2009 and non-domestic buildings (such as hotels) will require energy performance certificates when sold or rented.

3. In 2007 the UK government established the **Carbon Reduction Commitment** which has implications for large hotels and attractions (Department for Food Environment and Rural affairs 2008). This requires energy users, above a specified level, to audit energy use and purchase emissions allowances each year.

The following resources provide background on climate change policy:


CLIMATE CHANGE AND TOURISM

Resources on climate change and tourism have been grouped under the following three headings although there is a certain amount of overlap:

- Climate change impact on the tourism resource
- Tourism impacts on climate change
- Mitigation and adaptation strategies

It should be noted that much of the research conducted on tourism and climate change is published outside of tourism journals in climate-meteorological journals and geography-environmental management journals (Scott et al 2005).
Climate change impact on tourism resource
Most of the early studies on climate change and tourism focused on tourism as a climate sensitive sector. These studies examine potential and actual changes in tourism flows due to climatic conditions such as warmer summers and reduced snow cover. Many studies focus on specific regions and there are a number of destination specific reports available via the internet. Ecosystems will be, and are indeed already being, affected by climate change with resulting impacts on ecotourism destinations through biodiversity loss, however, there has been less work on this in the tourism area.

A key focus has been general temperature changes and the reduced competitiveness of key destinations. This has led to the development of tourism climate indexes. The most popular index to date is the Mieczkowski tourism climatic index (Amelung and Viner 2006) although it is criticised for lack of meaning attached to the quantitative climatic measures (de Freitas 2003). De Freitas (2003) provides a good overview of the attempts to create a tourism climatic index. The impact on ski reports is also well researched potentially driven by industry as early impacts have been apparent (Gössling and Hall 2006). The following texts examine the climate change impact on the tourism resource:


Brazier, C., 2008. To Fly or Not to Fly? *New Internationalist*, 409, 4-9
(An interesting discussion article from a non-academic perspective.)

Breiling, á M., Charamza, P., 1999. The Impact of Global Warming on Winter Tourism and Skiing: A Regionalised Model for Austrian Snow Conditions. *Regional Environmental Change*, 1, 1, 4-14

Ceron, J.P., Dubois, G., 2005 The potential impacts of climate change on French tourism. *Current Issues in Tourism*, 8, 2/3, 125-139


Tourism impacts on climate change
Tourism contributes to climate change through GHG emissions from transport, accommodation and activities. Tourism was responsible for between 4% and 6% of global emissions in 2005 (World Tourism Organisation 2007), transport being responsible for the largest share (between 75-90%) (Gössling 2002a). Furthermore, it is air travel that causes the bulk of the problem (Peeters et al 2006). The following texts provide a solid background to tourism’s impact on climate change:


Dubois, G. and Ceron, J.P., 2006b. Tourism and Climate Change: Proposals for a Research Agenda. *Journal of Sustainable Tourism, 14(4), 399-415*


Gössling, S., 2002b. Human-Environmental Relations with Tourism. *Annals of Tourism Research, 29(2), 539-556*


Mitigation and adaptation strategies
Mitigation and adaptation are different but related things. Mitigation refers to attempts to reduce the impact of tourism on climate change while adaptation refers to attempts to adapt tourism to climate changes. However, adaptation might also relate to adaptations made to achieve national mitigation strategies related to GHG emissions – hence the relationship. For instance, as a transport intensive industry mitigation policies related to GHG emissions will increase costs of transport and impact tourism mobility.

Mitigation strategies can be informed by ecological footprint analysis and eco-efficiency analysis. The following articles give insight into this approach:


Currently one of the main ways to mitigate GHG emissions is through carbon offsetting schemes. A number of tour operators and airlines now provide an offsetting option when booking a holiday and a variety of sites enable individuals to calculate the carbon footprint of their holiday and indeed other
elements of consumption. There is, however, some scepticism about the value of carbon offsetting and it is currently the focus of tourism research. The following shed some light on this issue:


The following are examples of sites which provide carbon footprint calculators:


With respect to adaptation, most work has been done in relation to the skiing industry which is already feeling the impact of rising temperatures. To date few studies have focused in detail on adaptation strategies but the following give an insight into this area:


Behringer, J., Buerki, R., Fuhrer, J., 2000. Participatory Integrated Assessment of Adaptation to Climate Change in Alpine Tourism and Mountain Agriculture. *Integrated Assessment*, 1, 4, 331-338


The tourism industry has been undertaking a variety of initiatives to tackle wider environmental impacts and sustainability issues including climate change. The following provide examples:


Considerably less has been written on leisure and climate change beyond the literature on tourism. A few studies discuss outdoor leisure and/or recreation but these are essentially set in a tourism context. Leisure is, of course, much more than this and there are a whole raft of issues for the leisure industry related to the production of products and experiences and their consumption.

Day to day leisure travel is also a key issue, but much less researched, and climate change will also have an effect on the outdoor leisure resource. Beyond these aspects, the main issues for the leisure industry relate to carbon intensive products or experiences. Some of the climate change issues relate to manufacture and development; for instance, electronic equipment is changing its design to reduce energy consumption.

Other issues relate to user practices, such as the impact of TVs and computers being on for many hours or the use of thrill rides at theme parks. There are also unexpected consequences, for example, Travers (1998) discusses the clothing retail implications of a changing climate, thus the topic is potentially very diverse. The following material provides reading more specifically on leisure:
CONSUMER DECISION MAKING, BEHAVIOUR AND CLIMATE CHANGE

People normally buy the best quality products they can afford, choosing the cheapest if it seems as good as slightly more expensive options. There are however, some people who apply additional criteria to the decision making. Choosing to take the train rather than flying may take longer and could cost more; it is an example of ethical purchasing behaviour in order to reduce the carbon footprint. A growing number of studies chart environmental awareness in general and specific to climate change. From an individual perspective, concern for the environment largely remains unrelated to holiday travel behaviour (Anable et al., 2006; Becken, 2007; Miller et al., 2007). Over 75% believe flying less would have an impact on the UK’s contribution to climate change but few are willing to fly less (Defra 2007). The following material provides reading on consumer decision making with respect to climate change:


ANNOTATED GUIDE TO INTERNET RESOURCES

The following list has been developed from a list that appeared in Hall and Higham (2005):

Australian Government Department of Climate Change

BBC
http://www.bbc.co.uk/topics/climate_change

Carbon Trust
http://www.carbontrust.co.uk/default.ct

Cato Institute, global warming
A private US policy research foundation focusing on 'limited government, individual liberty, free markets and peace'

Climate Action Network
http://www.climatenetwork.org/
A network of NGOs focusing on climate change issues.

Cooler Heads Coalition
http://www.globalwarming.org
The Cooler Heads Coalition is a sub-group of the National Consumer Coalition. It was formed on 6 May 1997 ‘to dispel the myths of global warming by exposing flawed economic, scientific, and risk analysis’

Department for Environment, Food and Rural Affairs, Climate Change and Energy
http://www.defra.gov.uk/environment/climatechange/index.htm

Destinet
http://destinet.ew.eea.europa.eu/
Information for tourist destinations and stakeholders aiming to disseminate best practice in sustainable tourism development.

EDF Energy, The Big Green Switch: Recreation and Leisure
http://www.biggreenswitch.co.uk/recreation_and_leisure

Energy Saving Trust
http://www.energysavingtrust.org.uk/

European Environment Agency
http://www.eea.europa.eu/themes/climate

European Commission
http://ec.europa.eu/environment/climat/home_en.htm
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Experts in Climate Change and Tourism (eCLAT)
http://www.icis.unimaas.nl/eclat/

Gateway to the United Nations System’s work on Climate Change
http://www.un.org/climatechange/

Greenpeace, Stop Climate Change
http://www.greenpeace.org/international/campaigns/climate-change

IATA
http://www.iata.org/whatwedo/environment/climate_change.htm

Indicators of Climate Change in the UK
http://www.ecn.ac.uk/iccuk/

Intergovernmental Panel of Climate Change
http://www.ipcc.ch/

International Civil Aviation Organisation – Environmental Unit
http://www.icao.int/env/

The International Ecotourism Society
http://www.ecotourism.org/

International Energy Agency, Greenhouse Gas R&D Programme
http://www.ieagreen.org.uk/

The International Tourism Partnership
http://www.tourismpartnership.org/index.html

The Met Office
http://www.metoffice.gov.uk/research/hadleycentre/

The online learning portal from the Open University and the BBC
http://www.open2.net/climatechange/index.html

New Zealand Government’s climate change solutions
http://www.climatechange.govt.nz/

Pew Centre
http://www.pewclimate.org/

Tour Operators’ Initiative for Sustainable Tourism Development
http://www.toinitiative.org/

Tyndall Centre for Climate Change Research
http://www.tyndall.ac.uk/

UK Government Office of Climate Change
http://www.occ.gov.uk/
INTEGRATING CLIMATE CHANGE INTO THE TOURISM AND LEISURE CURRICULUM

The increasing significance of climate change merits its inclusion in both tourism and leisure undergraduate programs. It could be a component of first
or a second year current issues module or an optional final year module in its own right. There is currently much more scope for the latter on tourism courses. The teaching of climate change might be structured around the topic areas outlined here such as:

- International and national climate change policy directions.
- Impacts of climate change on tourism/leisure.
- Leisure/tourism impacts on climate change.
- Mitigation and adaptation.

The following topic areas provide opportunities for more analytical argument and would therefore be suitable for seminar discussion:

- Tourism industry implications (eg destinations, tour operators, small island states).
- Leisure industry implications (eg manufacturers, providers).
- Ethical decision making in leisure and tourism.
- Viability of alternatives to car and air travel.
- The eco tourism dilemma (eco tourism while attempting to develop sustainable tourism is often located in remote places and hence travel to destinations can result in a large carbon footprint).
- The carbon footprint of leisure – who is responsible - government, manufacturers, providers, consumers?
- Climate change impacts on specific leisure/tourism settings.

The following areas are relatively under developed in the literature and would provide good topics for student projects:

- Ethical purchase behaviour in tourism or leisure.
- Ecological footprint of leisure activities.
- Carbon offsetting and leisure or tourism.
- The rebound effect (where energy efficiency savings are offset by greater use – eg choosing a smaller more fuel efficient car and then traveling further for leisure).
- The climate change impact of home entertainment equipment.

Several areas have attracted more than their fair share of attention from researchers interested in climate change and could form a focus for delivery:

**Winter Sports**
The climate change impact on the skiing industry has received much attention. This topic provides opportunities to focus on the climate change impacts on the leisure/tourism resource and adaptation strategies. A number of authors address the impacts (Breiling and Charamza 1999; Fukushima et al 2002; Koenig and Abegg 1997; Moen and Fredman 2007; Unbehaun et al 2008) and Scott et al (2003) focus more on adaptation strategies. This is likely to be a popular topic for students as they can easily relate to the issues and often have direct experience.
Tourism Flows
Tourism flows have also been analysed outside the skiing context largely focusing on warmer summer tourism conditions in destinations (e.g. the Mediterranean) and tourism market origin areas (e.g. Northern Europe). Again this provides an opportunity to look at the climate change impacts on resources and issues for destination areas.

Transport Impacts
Transport impacts provide a focus on the tourism and leisure impact on climate change. The literature focuses on tourism but can easily be applied to leisure travel.

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