Climate Change and Tourism: Responding to Global Challenges

CTO / CRSTDP Regional Workshop
The Bahamas, 18-19 March 2008

Dr. Daniel Scott
Technical Report

Commissioned by
UNWTO-UNEP-WMO

2nd International Conference on
Climate Change and Tourism
(Davos, Switzerland – 1-4 Oct.)

Science Background Report
to UNWTO-UNEP-WMO
Davos Declaration
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Reviewed by over 20 experts on tourism and climate (UNWTO, UNEP, WMO, IATA, and others)

* Members of WMO Expert Team on Climate and Tourism
Climate Change Science

- The Climate is Changing

  ‘The warming of the climate system is unequivocal’ (IPCC-AR4 2007)

  Globally +0.8°C from 1906 to 2005

- Climate Change Has Just Begun

  The pace of climate change is ‘very likely’ to increase over the 21st century

  +1.8 to 6.4°C by 2100
Nov 2007
United Nations Secretary General
Ban Ki-Moon

‘This year through the IPCC, the world's scientists have spoken, clearly and in one voice. Not some scientists. Not leading scientists. But the world's scientists - united.

Global warming is the defining challenge of our age. Not ‘of the decade’ or even ‘our life.’ And not any mere challenge of our age -- but the one that defines us.’
BBC poll of 22,000 people in 21 countries

- 79% believe “human activity, including industry and transportation, is a significant cause of climate change.”

- 9 out of 10 believe action is necessary to address global warming
The New Realities of Tourism in an Era of Global Climate Change

- Impact & Adaptations at Tourism Destinations (50 pgs)
  - Mountain regions
  - Coastal regions and islands
  - Natural and cultural heritage

- Implications for Tourism Demand (20 pgs)
  - Geographic and seasonal shifts
  - Perceptions and media influence

- Emissions from Tourism: Status & Projections (23 pgs)
  - Results for 2005 baseline and 2035 projection

- Mitigation Measures in Tourism (32 pgs)
  - Mitigation potential for 2035
Climate Change Impacts at Tourism Destinations
Assessment of Major Impact Types at Tourism Destinations

- **Direct climatic impacts**
  - Warmer Summers
  - Warmer Winters
  - Precipitation Changes (water supply)
  - Increased Extreme Events

- **Indirect environmental change impacts**
  - Biodiversity Loss (terrestrial and marine)
  - Sea Level Rise
  - Disease

- **Impact of mitigation policy on tourist mobility**
  - Travel Costs and Destination Choice

- **Indirect societal change impacts**
  - Global/Regional Economic Impacts
  - Increased Security Risks (social/governance disruption)
Winter Sports Destinations: Are $Billions at Risk?

‘Global Warming Forces Sale of Scottish Winter Sports Resorts’
The Guardian – 14 Feb 2004

‘Global Meltdown Hits Skiing’
Denver Post – 16 Oct 2005

‘Global Warming could close half of Alpine ski resorts by 2050’
Telegraph UK – 3 Dec 2003

‘Warming Threatens Ski Resorts’
CNN – 2 Dec 2003

Switzerland Christmas 1998
Extreme Events and Insurability

‘Hurricane Katrina Blows Away ‘Big Easy’ Tourism’
31 Aug 2005 - USA Today

US Gulf Coast & Caribbean Region
(Mid to Late-21st Century)
- Estimated premium increase 20-80%
- Increase deductibles (order of magnitude)
- Drop coverage in high risk areas
### Percent of Coral Reef Experiencing Bleaching at Least Every 2 Years

<table>
<thead>
<tr>
<th>Ocean region</th>
<th>HadCM3</th>
<th>PCM</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Ocean</td>
<td>94–95</td>
<td>60–71</td>
</tr>
<tr>
<td>100</td>
<td>98–99</td>
<td></td>
</tr>
<tr>
<td>SE Asia</td>
<td>90–94</td>
<td>67–77</td>
</tr>
<tr>
<td>100</td>
<td>94–96</td>
<td></td>
</tr>
<tr>
<td>Micronesia</td>
<td>100</td>
<td>91–99</td>
</tr>
<tr>
<td>100</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>GBR/Coral Sea</td>
<td>95–99</td>
<td>60–71</td>
</tr>
<tr>
<td>99–100</td>
<td>96–98</td>
<td></td>
</tr>
<tr>
<td>Polynesia</td>
<td>75–99</td>
<td>67–84</td>
</tr>
<tr>
<td>91–99</td>
<td>95–97</td>
<td></td>
</tr>
<tr>
<td>Caribbean</td>
<td>94–99</td>
<td>48–88</td>
</tr>
<tr>
<td>100</td>
<td>92–96</td>
<td></td>
</tr>
<tr>
<td>World</td>
<td>90–94</td>
<td>70–80</td>
</tr>
<tr>
<td>98</td>
<td>95–97</td>
<td></td>
</tr>
</tbody>
</table>

2030s = top row; 2050s = second row

Globally - all major coral reefs are expected to be severely degraded by 2050 ... 32% at risk of die-off by 2050

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*Donner et al. 2005*
Economic Risks of Climate Change

‘Our actions over the coming few decades could create risks of major disruption to economic and social activity, later in this century and in the next, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century.’

‘Climate change is the greatest challenge facing humanity at the start of the 21st century. Failure to meet this challenge raises the spectre of unprecedented reversals in human development.’
Caribbean Regional Sustainable Tourism Development Programme
CTO Lot 3: Sustainable Tourism Policy Development

Tourism Vulnerability ‘Hotspots’

Key:
- **WS** = warmer summers
- **WW** = warmer winters
- **EE** = increase in extreme events
- **SLR** = sea level rise
- **LB** = land biodiversity loss
- **MB** = marine biodiversity loss
- **W** = water scarcity
- **D** = increase in disease outbreaks
- **TCI** = travel cost increase from mitigation policy
- **PD** = political destabilization

Regional Knowledge Gaps

- Caribbean
- Mediterranean
- Middle East
- South/East Asia
- Pacific Ocean Small Island Nations
- Indian Ocean Small Island Nations
- Australia/New Zealand
See Them Now: Endangered Wonders
Places to Visit Before they Vanish

- Arctic and Antarctic Wildlife – Polar Bears
- Cloud Forests – Costa Rica’s Cloud Forest
- Coral Reefs – Great Barrier Reef, Caribbean
- Mountain Glaciers/Snow Caps
  - in Andes, Alps, Himalayas, Rockies, Kilimanjaro
- Low-lying Islands and Cities
  - Maldives, Tuvalu, Venice
- Mangrove Forests
  - Florida Everglades, Bangladesh
Destination Level Adaptation

- **All** tourism businesses and destinations will need to adapt in order to minimize risks and capitalize on new opportunities in a sustainable way
  - *it is no longer sufficient to rely on past experience*

- Very limited knowledge of the capacity of current adaptations to cope successfully with future climate change
  - *some evidence that tourism operators are over-estimating adaptive capacity*
  - *some tourism stakeholders-regions will require assistance to adapt effectively to climate change*
  - *in the early stages of identifying what type of assistance is needed in the tourism sector and priority regions*
The process of adaptation needs to start now

- Information requirements for successful adaptation will increase substantially over the next 25 years
- Infrastructure and market transitions will take decades in some cases
Implications of Climate Change for Tourism Demand

Travel: the new tobacco
The founder of Rough Guides now believes that our addiction to 'binge flying' is killing the planet
Changes in climate resources for tourism:
- Alter geographic and seasonal distribution of demand
  - proportionately more tourism spending in temperate nations
- No impact on demand at global scale

Indirect environmental change:
- Impact demand at destination-regional level
- No impact on demand at global scale

Indirect societal change:
- Impact demand at destination-regional level
- Reduce demand growth at global scale if economic growth adversely affected (reduced discretionary income)

Mitigation policy and travel costs:
- Increased travel cost and environmental concern over tourism travel may impact long-haul and air travel
- Market research is required to better estimate impact
Tourist perceptions of destination impacts and of the environmental consequences of travel will likely play a central role in travel decision-making

» *Important influence by the media*

Accurate information on tourism and climate change is essential

» *Speculation and misinformation on impacts exists and is dangerous*

Example: ‘The likelihood [is] that Mediterranean summers may be too hot for tourists after 2020’  
- The Guardian, 28 July, 2006

» *Improved science on impacts is in the best interest of the tourism industry and decision-makers*
Impacts of Mitigation Policy on Tourism Demand

“It’s a sin to fly,’ says church”
- The Sunday Times, July 2006
Emissions from Global Tourism: Status in 2005 & Projection to 2035
Calculation of Emissions from the Tourism Sector

- **‘Global Tourism Emissions Model’ for 2005**
  - UNWTO Department of Statistics and Economic Measurement of Tourism prepared a specific database for the project
  - Three sub-sectors: transport, accommodation, activities
  - Includes international and domestic tourism

- **‘Business as Usual’ Scenario for 2035**
  - Arrivals and LOS trend projections: ‘*Tourism Vision 2020*’, nation and industry forecasts
### Global Tourism Emissions in 2005: CO₂ Only *

<table>
<thead>
<tr>
<th>Sub-Sectors</th>
<th>CO₂ (Mt)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Air transport *</td>
<td>522</td>
<td>40%</td>
</tr>
<tr>
<td>Car transport</td>
<td>418</td>
<td>32%</td>
</tr>
<tr>
<td>Other transport</td>
<td>39</td>
<td>3%</td>
</tr>
<tr>
<td>Accommodation</td>
<td>274</td>
<td>21%</td>
</tr>
<tr>
<td>Activities</td>
<td>52</td>
<td>4%</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>1,307</strong></td>
<td></td>
</tr>
</tbody>
</table>

| Total World       | 26,400   |     |
| (IPCC 2007)       |          |     |

| Tourism Contribution | 5.0% |

* - does not include non-CO₂ emissions and impact on climate

Transportation of Tourists = 75% of Sector Emissions
If Tourism was a Country

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>Percentage of total emissions (2005)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>22.2 %</td>
</tr>
<tr>
<td>2</td>
<td>China</td>
<td>18.4 %</td>
</tr>
<tr>
<td>-</td>
<td>European Union</td>
<td>11.4 %</td>
</tr>
<tr>
<td>3</td>
<td>Russia</td>
<td>5.6 %</td>
</tr>
<tr>
<td>-</td>
<td>Global Tourism Sector</td>
<td>5.0%</td>
</tr>
<tr>
<td>4</td>
<td>India</td>
<td>4.9 %</td>
</tr>
<tr>
<td>5</td>
<td>Japan</td>
<td>4.6 %</td>
</tr>
<tr>
<td>6</td>
<td>Germany</td>
<td>3.0 %</td>
</tr>
<tr>
<td>7</td>
<td>Canada</td>
<td>2.3 %</td>
</tr>
<tr>
<td>8</td>
<td>United Kingdom</td>
<td>2.2 %</td>
</tr>
<tr>
<td>9</td>
<td>South Korea</td>
<td>1.7 %</td>
</tr>
<tr>
<td>10</td>
<td>Italy</td>
<td>1.7 %</td>
</tr>
</tbody>
</table>
‘Business as Usual’ Projection of Future CO₂ Emissions from Tourism
Post-Kyoto Mitigation Targets
(all wrt 1990 levels)

- **IPCC** -80% by 2050 for industrial nations

- **European Union**
  - 20% by 2020
  - discussing -60-80% by 2050

- **US States**
  - Arizona, California, Conn., New Mex.,
  Oregon, VT  75+% by 2050

- **Canadian Provinces**
  - Ontario, Sask.,
  BC -80% by 2050

PATA CEO Challenge 2008
‘Environmental Regulations – Preparing for the Inevitable’
Mitigation Policies & Measures
Tourism Mitigation Scenarios for 2035

**High Tech-Efficiency Scenario:** *(changes versus BAS)*
» reduction in aviation energy consumption per pkm of 50% (vs 32% in BAS)
» additional 2%/year reduction in car emissions per pkm
» additional 2%/year reduction in other transport emissions per pkm
» additional 2%/year reduction in accommodation emissions per guest-night
» additional 2%/year reduction in activities emissions per trip

**Modal Shift-Longer Stay Scenario:** *(changes versus BAS)*
» no further growth in aviation number of trips and pkm
» growth in rail/coach of 2.4% to 5% per year to keep total number of trips growth constant with BAS
» 0.5%/year increase in average LOS vs 0.5% reduction/year in BAS

[ii] The number of pkm is kept constant, using average trip distance as found in BAS, thus also keeping the number of trips by air transport constant. However, it is possible to reach the same emissions reduction with some growth in the number of trips by air when the average distance is reduced (i.e. less long haul and more medium haul).
Future CO$_2$ Emissions from Global Tourism: Scenarios of Mitigation Potential in 2035
The Future is Now

The scientific evidence is clear - climate change must be considered the greatest challenge to sustainable development and tourism in the 21st century.

Tourism can play a significant role in addressing climate change. It must show leadership as an agent of change for both adaptation and mitigation – the time for action is now.
The Davos Declaration

- Endorsed by 450 delegates (from 80 countries) in Davos

The Conference agreed that:

- climate is a key resource for tourism and the sector is highly sensitive to the impacts of climate change and global warming, many elements of which are already being felt. It is estimated to contribute some 5% of global CO2 emissions.

- tourism - business and leisure - will continue to be a vital component of the global economy, an important contributor to the Millennium Development Goals and an integral, positive element in our society.

- given tourism’s importance in the global challenges of climate change and poverty reduction, there is a need to urgently adopt a range of policies which encourages truly sustainable tourism that reflects a "quadruple bottom line" of environmental, social, economic and climate responsiveness.

- the tourism sector must rapidly respond to climate change, within the evolving UN framework and progressively reduce its Greenhouse Gas (GHG) contribution if it is to grow in a sustainable manner; This will require action to:
  - mitigate its GHG emissions, derived especially from transport and accommodation activities;
  - adapt tourism businesses and destinations to changing climate conditions;
  - apply existing and new technology to improve energy efficiency;
  - secure financial resources to help poor regions and countries.
The Conference

- sets out a range of specific actions to be taken by all stakeholders in the sector to immediately begin to establish and implement a long range carbon-neutral roadmap;
- invites governments and international organizations; the tourism industry; consumers; research and communications networks to implement these recommendations, with concrete commitments and action plans, and to use the UNWTO on-line Climate Change and Tourism Information Exchange Service as a platform, for committed stakeholders to register their pledges and activities toward adaptation and mitigation on an on-going basis;
- stresses the need that UNWTO, in collaboration with UNEP and WMO, continue to lead this process, and to consider convening a Third Conference on Climate Change and Tourism, at an appropriate time in the future, to review progress, to maintain response levels and to identify further needs and actions;
- urges action by the entire tourism sector to face climate change as one of the greatest challenges to sustainable development, and to the Millennium Development Goals in the 21st Century.
Message to Consumers:

‘Be demanding of the enterprises that you deal with. Chose those that act in a civic-minded manner and that offer the most carbon-efficient options.’

Message to Travel and Tourism Professionals:

‘… the IPCC and the Stern Review have established this point and placed it beyond dispute:

if it is tough to act today, it will be even tougher to do so tomorrow; the cost of inaction will quite clearly be much higher than the cost of doing something.’
The Conference

- sets out a range of specific actions to be taken by all stakeholders in the sector to immediately begin to establish and implement a long range carbon-neutral roadmap;
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The Davos Declaration

Strongly endorsed by Ministers’ Summit on Tourism and Climate Change at World Travel Market (London, UK – Nov 2008)

Adopted by the UNWTO General Assembly (Cartagena, Columbia – Dec 2008)
World Tourism Day 2008 will focus on Tourism’s response to the challenges of climate change. It will be a year long campaign aiming to:

- **Advance** – Tourism in the UN global response to the challenges of climate change and poverty alleviation
- **Promote** – the Davos Declaration Process for the Tourism Sector
- **Encourage** – tourism stakeholders to adapt, to mitigate and use new technology and secure financing for the poorest countries.