

SUSTAINABLE
TOURISM



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Tourism Climate Change Assessment in Australia – evidence from five case studies

Prof David G Simmons

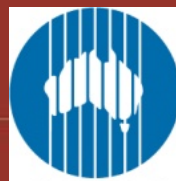
Director of Research

david.simmons@crctourism.com.au

Project supported by:



Australian Government
Department of Resources
Energy and Tourism



CSIRO

Sustainable Tourism Cooperative Research Centre Established
by the Australian Commonwealth Government

The Issue

Australia is the developed country in the world most likely to be affected by climate change.

Stern (UK)

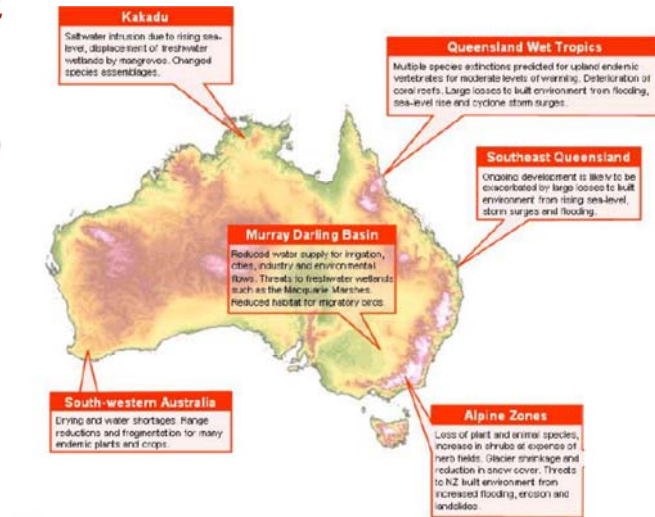
Australia is likely to be greatly diminished as an international tourist destination by climate change” (p. 174), with “disappearance of snow based tourism” (p. 167); and “catastrophic destruction of the Great Barrier Reef” without mitigation (p. 167).

Prof R Garnaut
Garnaut Climate Change Review 2008

“Our judgement in terms of the economic cost of action is that it (an ETS) is the right and responsible way to go. Otherwise the flow-through costs for drought, water, river systems ... agriculture, food, tourism ... is huge”

Prime Minister K Rudd

The Weekend Australian July 5-6, 2008 :9



IPCC WGII Chapter 11 (Figure 11.5).

Project Objectives – scoping study

- **Adaptive capacity /pathways of Australian tourism destinations**
- **Five case study regions.**
- **Identify adaptation options and strategies for each case study region.**
 - **Non-economic and economic adaptations**
- **Identify practical ‘Tool’ – destinations**
- **Research Agenda**



Case Study Selection

Case study destinations were nominated by STCRC (on the basis of their varying degrees of perceived vulnerability) following consultation with key stakeholders.

Significant Vulnerability:

- Tropical North Queensland (Cairns; includes Great Barrier Reef)
- Kakadu
- Victorian Alps

Some Vulnerability:

- Barossa Valley

Little or No Vulnerability:

- Blue Mountains





Methodology : 2020; 2050; 2070

1. Defining case study regions (ABS, TRA and LGovt regions)
2. Desktop Reviews of existing knowledge at each destination (Tourism; Climate vulnerabilities; Tourism-climate relationship)
3. Populating the **VICE** stakeholder grid (Visitors, Industry, Community, Environment)
4. Semi-structured stakeholder interviews
5. CSIRO Regional Climate Change Projections **on Tourism**
6. **Social learning stakeholder workshops**
7. Conduct an economic analysis of tourism for the five destinations

Populating the VICE Grid

The visitor, industry, community, environment grid approach to identify key tourism stakeholders for the semi-structured interviews and stakeholder social learning workshops

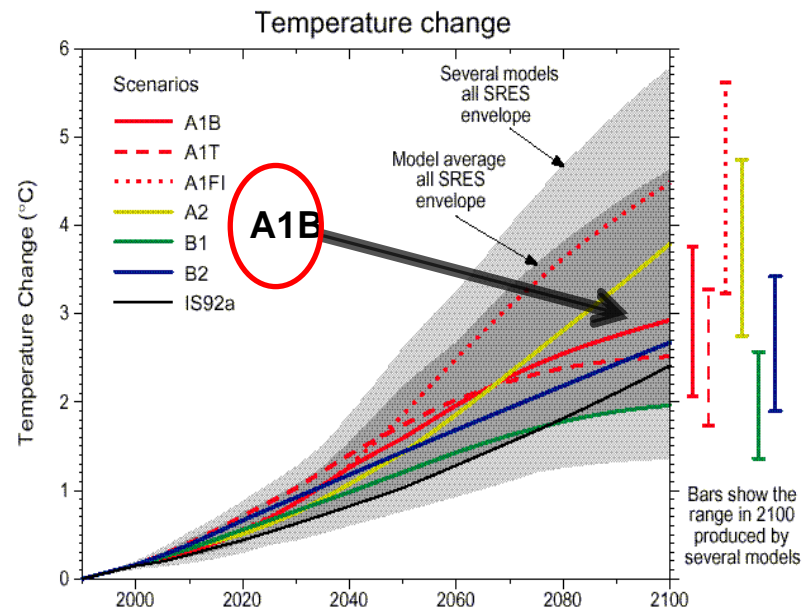
	Visitors	Industry	Community	Environment
Policy	Regional tourism organisation; visitor information centre	State tourism organisation; Accommodation operator or association	Elected Member of Parliament (state or federal)	Land management agency (e.g. state based EPA)
Practice	Tour specialist	Large Accommodation provider	City/regional planner	City/regional environment manager
Practice	Other tour operator	Ecotourism peak body	Community board member	Non-government organisation (NGO)

CSIRO Regional Climate Change Projections

- Historical changes in climate for each region
- Climate change projections for the five tourist destinations
- Applying the complex climate change science in workshop settings



the research team adopted the A1B 'middle-of-the-road' emission scenario as identified by the IPCC (AR4 2007).



Case Study Example: Cairns

Scenarios presented to attendees at the social learning workshop

Variable	Scenario 1 2020	Scenario 2 2050	Scenario 3 2070
Climate change for Cairns relative to 1971-2000 average			
Temperature (min. and max)	0.6°C ↑	1-1.6 °C ↑	1.3-2.5 °C ↑
Sea level & storm surge risk	8-14 cm	19-37 cm	35-56 cm
Increase in days over 35 °C	+1	+ 4-8	+ 5-28
Total Rainfall (%)	-0.7	-1.9	-3.0
Number of Rain days	0.0 Little change	-0.1 Little change	-0.1 Little change
Percentage increase in heavy rainfall	1.8	5.1	8.2
Cyclone intensity of category 3-5		60% ↑	140% ↑
Atmospheric CO ₂		500 ppm	
Sea surface temperature (°C)	0.5 ↑	1.3 ↑	2.1 ↑

Likely Bio-physical Effects

Variable	Scenario 1 2020	Scenario 2 2050	Scenario 3 2070
Great Barrier Reef			
Disturbance from climate change	Minor	Moderate-Severe	Severe
Bleaching	More frequent; some loss of coral diversity Bleaching <1 every ten years	Reef bleached; 95% loss of coral reefs >once every 5 years	Reef bleached; 95% loss of coral reefs Annual event
Coral structure	No major damage	Structural damage; 50% decline in iconic coral species and shift to crusting forms	Rubble. Total loss of coral structure
Macro algal cover	Minor coverage- isolated	High coverage across reefs	Very high – extensive coverage
Invertebrates	Little change	Major decline	Few rubble inhabitants
Obligate Reef Fish (10% of total fish speciation; small colourful species)	Little change – decline on some reefs	Major decline	Total loss and 70% decline in pre-existing fish
Herbivorous species of fish	Little change	Increase	Dominant type but also a decline in species
Seabirds	Decline in nesting colonies	Major decline	Colonies crashed (loss of pelagic food source)

Likely effects on visitor experiences

Variable	Scenario 1 2020	Scenario 2 2050	Scenario 3 2070
Great Barrier Reef			
Impact on Tourists	Some decline at some sites	Major loss of tourist sites especially near shore and shallow reefs	Reef severely degraded; total loss of visual amenity. Possibly interest due to size of destruction and algae
Chance/likelihood for 'average tourist' of: <ul style="list-style-type: none"> • Seeing good coral • Seeing turtles • Seeing whales • Catching fish 	High	Very low	Extremely low



Tourists being evacuated by Sunlover Cruises at Palm Cove. Cyclone Steve February 2000. Courtesy of *The Cairns Post*.

Integration of Case Studies

Potential Barriers:

- **the scale and uncertainty surrounding climate change projections**
- **communication within and between regional and national bodies**
- **concerns regarding the capacity of small to medium tourism enterprises to adapt, relative to governments and larger operators**



Key Conclusions (economic)

- Growth in the **Australian economy** is expected to slow under current climate change projections:
 - declining returns from agriculture and
 - increasing competitiveness in the manufacturing sector in developing countries, and
 - more difficult physical mining conditions.
- In spite of GDP and population growth **tourism** is not seen as a buffer to these effects and is seen to retrench in regions where there is strong dependence on tourism in regional economies.
- The high **labour intensity** of the tourism industry can lead to other social problems as tourism shrinks in regional economies.
- The tourism sector needs to be active in climate adaptation, energy efficiency and new product development to maintain its viability.

Future Actions for all Case Studies

With tourism one of a number of activities that occurs within communities - all of which draw on natural resource capacities and local infrastructure - workshop participants recognised that adaptation for tourism destinations should be part of the general community management processes.

Destination Management



Future Actions

Government

- **risk assessments; integrated regional planning; approaches; ‘water policy’; infrastructure; incentives for best practice**
- **Adaptation strategies**
 - **simple, cheap and effective; clearly indentified needs and benefits; clear actions, timelines and targets**

Business

- **Reduce environmental impact; environmental accreditation; product diversification, resource sharing**

Future Actions

Industry

- a tourism ‘voice’; co-ordinate communicate, inform, integrate
- Develop new tourism products/experiences; implement offsets
- Inform and communicate how a region is tackling climate change
- Develop and market Australian destinations as ‘clean-green’
- Undertake research into the expected and actual changes in visitor behaviour

Communities

- Lobby, support government,
- build support on residents beliefs and values; increase ‘living’ efficiencies (residents, staff, visitors),
- Understand and monitor response of adaptive strategies on social, and bio-physical processes

Summary

The tourism sector in Australia is largely unprepared for climate change mitigation or adaptation: - requirements

- **confidence that the climate is really changing and that increased variability in climate is part of the process**
- **motivation to avoid risk or take up opportunities**
- **demonstration of new technologies**
- **transitional and legislative support from government**
- **resources from government and private stakeholders**
- **effective monitoring and evaluation – climate change is a moving target**

Knowledge gaps

- **Climate data resolution**
- **Bio-physical predictions**
- **Visitor behaviour adaptation:**
 - **Consumer behaviour**
 - **Tourism**
 - **Daily leisure /recreations**
- **Scale:**
 - **Business**
 - **Destination**
 - **National patterns (82% energy in ‘distribution’)**
 - **Global patterns (aviation or....)**
- **Integration of mitigation and adaptation**





Toolkit

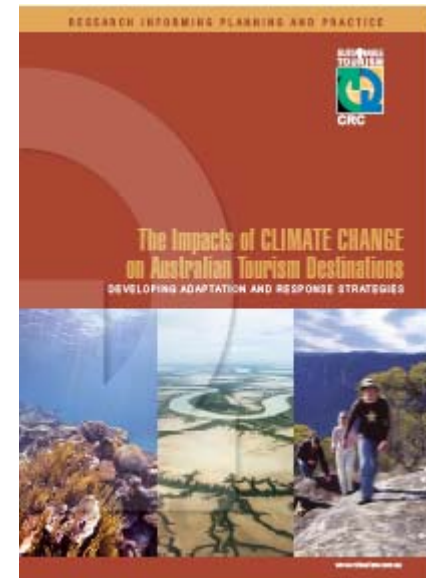
Is a self assessment tool possible?

- **Climate and scientific technical assistance**
- **Economic modelling assistance**
- **Independent facilitation**

- **Who leads:**
 - **Destinations as part of “place management”
local and regional governments**

**This presentation is based on information contained in
Sustainable Tourism Cooperative Research Centre's
publications:**

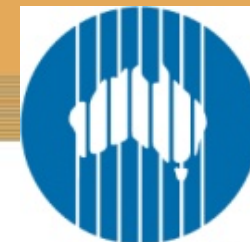
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STCRC Climate Change Team



Australian Government
Department of Resources
Energy and Tourism



CSIRO

National integration and editors

Prof Stephen Turton	James Cook University/CSIRO
Dr Wade Hadwen	Griffith University
Dr Robyn Wilson	James Cook University
Dr Bradley Jorgensen	La Trobe University
Prof David Simmons	Sustainable Tourism CRC

Tropical North Queensland Case Study Team

Prof Steve Turton	James Cook University
Dr Robyn Wilson	James Cook University

Barossa Valley Case Study Team

Dr Bradley Jorgensen	La Trobe University
Dr Maureen Rogers	Charles Sturt University
Dr Peter Hayman	SA Research & Development Inst
Prof Graham Brown	University of South Australia
Mr Jenny Davis	University of South Australia

Victorian Alps Case Study Team

Prof Amanda Lynch	Monash University
Ms Carolina Roman	Monash University
Dr Lee Tryhorn	Monash University

Economic Modelling Team

Dr Tien Duc Pham	University of Queensland
Prof Peter Forsyth	Monash University
Mr Raymond Spurr	University of New South Wales

Kakadu Case Study Team

A/Prof Pascal Tremblay	Charles Darwin University
Ms Anna Boustead	Charles Darwin University

Blue Mountains Case Study Team

Dr Tracey Dickson	University of Canberra
Dr Bruce Hayllar	University of Technology, Sydney
Rosalie Chapple	Blue Mountains World Heritage Inst
Sue Uzabeaga	Blue Mountains World Heritage Inst
Kate Hammill	Blue Mountains World Heritage Inst
Beatrice Pegard	Blue Mountains World Heritage Inst
Mario Rimini	Blue Mountains World Heritage Inst
Phoenix Lawhon Isler	Blue Mountains World Heritage Inst
Dr John Merson	University of New South Wales

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Chairman: Stephen Gregg

Chief Executive: Ian Kean

Director of Research: Prof. David Simmons

CRC for Sustainable Tourism Pty Ltd

Gold Coast Campus Griffith University

Queensland 4222 Australia ABN 53 077 407 286

Telephone: +61 7 5552 8172 Facsimile: +61 7 5552 8171

Website: www.crctourism.com.au

Bookshop: www.crctourism.com.au/bookshop

Email: info@crctourism.com.au