

Green Tourism Futures: Climate Change Responses by Australian Government Tourism Agencies

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Abstract

The National Climate Change Adaptation Framework identified tourism as one key sector vulnerable to the impacts of climate change in Australia. This paper evaluates how nine government tourism agencies are responding to the issue of climate change in Australia. Information on climate change, sustainability and going green is drawn from the corporate websites, annual reports, tourism plans, fact sheets, and case studies produced by these government tourism agencies from 2007 to 2010. The paper critically evaluates how government tourism agencies are addressing climate change issues, by promoting carbon reduction initiatives and carbon offsetting schemes for tourism operators. Climate change tourism responses are more developed in Australian states with climate change policies and in destinations vulnerable to the impacts of climate change or dependent on long haul travellers.

Keywords: climate change, Australia, government tourism agencies, mitigation, carbon offset

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In Australia, the National Climate Change Adaptation Framework identified tourism as one key sector vulnerable to the impacts of climate change (COAG, 2007). In response, the Tourism Ministers' Council established a National Tourism and Climate Change Taskforce in 2007. Recent federal government initiatives include a national action plan on tourism and climate change, and a guide to climate change adaptation and mitigation measures for tourism operators (DRET, 2008, 2009a, 2010). Climate change workshops for tourism operators were held around Australia in 2009 profiling causes, impacts, case studies and the *Climate Change Guide* (DRET, 2009b). Industry reports address climate change responses from the tourism sector (QTIC, 2008; TTF, 2008; WTO, 2008). The Sustainable Tourism CRC (2009) also initiated a research program on climate change and tourism in 2007, focusing on the carbon footprint of Australian tourism (Forsyth et al, 2008; Dwyer et al, 2010; Hoque et al, 2010), economic impacts of climate change on tourism (Forsyth et al, 2007; Pham et al, 2010), and the impacts of climate change on five key tourism regions (STCRC, 2009; Turton et al, 2009, 2010). These studies focus on the greenhouse gas emissions of tourism, costs, and adaptation to climate change by the tourism industry. How government tourism agencies are responding to climate change has not been assessed.

Literature Review

Recognition of tourism's vulnerability to the impacts of climate change in Australia and establishment of a National Tourism and Climate Change Taskforce resulted in a number of responses by the federal government. In 2008 a national action plan entitled *Tourism and Climate Change – A Framework for Action* outlined five areas of action designed to achieve the following outcomes: (1) improved understanding of tourism's vulnerability to the physical and economic impacts of climate change; (2) a tourism industry prepared for future constraints on carbon but still able to contribute economically; (3) repositioned marketing strategies that address the challenges and opportunities of climate change; (4) an industry informed by effective outreach and communication; and (5) 'a nationally consistent, inclusive and cooperative approach to implementation' (DRET, 2008, p. 5). The plan then specified a number of climate change actions for the tourism industry that had already been undertaken or were to be initiated to achieve these outcomes.

One of the outcomes of the second action area was the *Climate Change Guide: Mitigation and Adaptation Measures for Australian Tourism Operators*, which briefly explained the issue of climate change, outlined a rationale for implementing mitigation and adaptation measures, and provided details and examples of specific measures that could be initiated (DRET, 2009a). This guide was specifically designed for individual tourism operators and was supplemented by a series of industry workshops conducted throughout Australia in 2009.

Industry organisations have also addressed the issue of climate change through a number of reports and papers. The Queensland Tourism Industry Council produced a report for its state-based members explaining the issue of climate change and its implications for tourism businesses and outlining strategies for managing risk and reducing greenhouse gas emissions (QTIC, 2008). On an Australia-wide basis, the Tourism and Transport Forum produced a position paper which specifically focussed on the aviation, transport and tourism sectors' contribution to greenhouse gas emissions, the implications of inaction, and examples of industry action to address the risks of climate change (TTF, 2008). At a global level, the World Tourism Organization commissioned an international team of experts to provide background for the Second International Conference on

Climate Change and Tourism to be held at Davos, Switzerland, in 2007. The resulting report synthesised knowledge about the impacts of climate change on tourism destinations worldwide, potential implications for tourist demand, the tourism industry's contribution to the problem, and responses of key stakeholder groups (WTO, 2008). The Davos Declaration, which resulted from the conference and is included in the final report, called for actions on climate change to be undertaken by governments and international organisations, the tourism industry and destinations, consumers, and research and communication networks.

In Australia, the Sustainable Tourism CRC (STCRC) instigated a research program on climate change and tourism. Forsyth et al (2008) measured the carbon footprint of Australian tourism using both production-based and expenditure-based estimates of direct and indirect greenhouse gas emissions. Hoque et al (2010) used the same methodology to measure the carbon footprint of Queensland tourism. Forsyth et al (2007) focussed on the economic impact on tourism of climate change policies such as mandatory restrictions, carbon taxes and the proposed Emissions Trading Scheme (ETS), whilst Pham et al (2010) explored the economic flow-on effects of climate change on tourism destinations.

In response to the first action area of the national action plan, the STCRC received federal government support and funding for a project to study the impacts of climate change on five tourism destinations: Kakadu, Tropical North Queensland, Blue Mountains, Barossa Valley and Victorian Alps (STCRC, 2009; Turton et al, 2009, 2010). The reports that emanated from this research analysed the physical, social and economic impacts of climate change on these destinations and outlined various adaptation strategies that could be led by governments, businesses, industry and communities. Government-led strategies did not specify the level of government or the individual department or agency responsible, and focussed on a range of climate change issues, for example, conducting risk assessments of natural assets, integrating planning across various land use sectors and providing funding for low carbon emission infrastructure development. However, actions that would be considered relevant for government tourism agencies included:

- providing information about the new carbon economy to enable tourism operators to assess the impact on their business; standardise a system of calculating emissions; develop a 'carbon' audit for the sector
- providing incentives for best practice management to assist operators to reduce their environmental impact, through rebates, tax incentives
- developing incentive schemes to support innovation and promote 'model' tourism businesses and organisations wanting to adapt to climate change (STCRC, 2009, pp. 8-9).

Whilst government and industry have identified various issues related to climate change, have instigated research on the impacts and implications for tourism of climate change, and have outlined desirable strategies and actions for key tourism stakeholders in response to these impacts and implications, the responses that have been adopted by government tourism agencies throughout Australia have not been analysed on a systematic basis. This research seeks to address this omission.

Methods

This paper evaluates how nine government tourism agencies are addressing and responding to the issue of climate change in Australia. These include Tourism Australia, six state tourism agencies (Queensland, New South Wales, Victoria, Tasmania, South Australia and Western Australia), and two territory tourism agencies (Australian Capital Territory and Northern Territory). Information is drawn from the corporate websites, annual reports, tourism plans, fact sheets, case studies, media releases, and newsletters produced by these government tourism agencies. This study focused on specific information relating to climate change, sustainability and 'going green' in tourism businesses produced by these tourism agencies. Information was located on the corporate websites of government tourism agencies using keyword searches, checking industry resources, and reading through recent tourism plans, strategies and annual reports (since 2007). Content analysis of this corporate tourism information was based on frequency of keywords, key themes, and the extent of agency coverage of climate-change related issues and impacts. The paper critically evaluates how government tourism agencies deal with climate change, by promoting carbon reduction initiatives and carbon offsetting schemes for tourism operators.

Results: Climate Change Impacts on Tourism

Government tourism agencies mainly focused on the impacts of climate change on destinations and increased costs for tourism operators. Destination impacts included changing weather patterns, storms and other natural disasters, and changing consumer travel behaviour due to increased awareness of climate change. Impacts on long haul travel to Australia and risks to human health and biodiversity were also noted (Tourism NT, 2009), along with coral bleaching impacts on the Great Barrier Reef (Tourism Queensland, 2006). Other terms for climate change impacts used by tourism agencies were: threat or risk (NT), risk (Victoria), and threat or stress (Qld). Three tourism agencies stated the cost of climate change and carbon emissions for tourism operators included higher charges for energy, electricity, gas, fuel, goods and services, waste disposal, refrigeration, air travel, transportation, insurance and materials (NT, Qld, Victoria). Five tourism agencies also recognised business opportunities from climate change, with marketing and competitive advantages for environmentally sustainable tourism operators and destinations. These climate change opportunities were:

- energy and waste efficiency (SA)
- promotional and branding – low carbon tourism (SA)
- extended warmer seasons and expenditure; environmentally sensitive businesses (WA)
- environmental sustainability, competitive advantage, cost savings, attract green tourists (Vic, NT)
- offer offsets to travellers; channel offset funds to manage parks and environment (Tasmania)
- market as a climate-friendly destination and leader in addressing tourism climate change issues (Tasmania)
- new products and services; 'climate-friendly' facilities and amenities in parks (NT)
- Outback Offsets project – attract environmentally aware travellers from long haul markets (NT).

Three agencies noted there were promotional opportunities for destinations implementing carbon reduction programs as 'more carbon conscious tourists seek out low emission tourism options' (SATC, 2009, p. 15). The *National Long-Term Tourism Strategy* noted that clean green tourism products and environmental sustainability initiatives were increasingly required to attract major tourism markets concerned about climate change (DRET, 2009c). Developing climate friendly

products, services, facilities and destinations was a key tourism opportunity, based on reducing carbon emissions and attracting long haul travellers to Australia.

Results: Tourism Agency Responses to Climate Change

The government tourism agencies varied significantly in their extent and coverage of climate change issues. A keyword search of climate change words on the corporate websites of government tourism agencies indicated Tourism Queensland had the most in-depth coverage of climate change issues (1,415 responses) and carbon topics (191-291 responses), followed by WA, NT and Victoria (Table 1). The keywords of carbon emissions and greenhouse gas emissions also generated a high response. These keyword searches were often of any words (e.g. carbon) rather than an exact phrase (e.g. 'carbon offset') with duplication of responses. The total number of main tourism website pages (excluding plans, strategies and annual reports) that mentioned climate change, or carbon-related words (carbon credit, carbon/GHG emissions, carbon footprint, carbon neutral, carbon offset) varied from one page (NSW, SA) to 59 pages (Tourism Qld, 2010a). This included the allied websites of Outback Offsets (NT), Tourism Excellence (Victoria) and Green Tourism (Tasmania) that focused on sustainability.

The climate responses by Tourism Queensland are mainly because 'consumers are starting to think about climate change and the impact of carbon on the environment' (Philips, 2009).

Table 1 Keyword Search of Climate Change Words on Government Tourism Websites

	Tourism Queensland (59 pages)	Tourism WA (23 pages)	Tourism NT (39 pages)	Tourism Victoria (7 pages)	Tourism Tasmania (17 pages)	Tourism NSW (1 page)	Tourism Australia (2 pages)
Climate change	1,415	34	13	18	10	7	13
Carbon emissions	207	18	16	13	6	1	3
Greenhouse gas emissions	211	16	8	16	5	1	3
Carbon offset	259	18	15	13	5	1	5
Carbon credits	291	18	15	12	1	1	1
Carbon footprint	251	18	16	13	5	0	3
Carbon mitigation	191	20	15	13	1	0	0
Carbon neutral	203	19	15	17	6	0	1

Notes: Keyword search of any words, not exact phrase; Keyword search conducted online on 13 October 2010

No responses for South Australian Tourism Commission using these keywords; 1 website page mentioned climate change

Tourism Queensland (2010a), Tourism Tasmania (2010) and Tourism Western Australia (2010a) had a specific section of their website dedicated to climate change issues (Table 2). Tourism Victoria (2009) planned to add a climate change section to their corporate website, with climate change information currently found on their allied 'Tourism Excellence' (nd) website in the training module about sustainability in tourism. Northern Territory climate change information was included in a 'Going Green' section of their corporate website (Tourism NT, 2010) and in an allied website for the NT Outback Offsets pilot project implemented in 2008/09 (Outback Offsets, nd). The climate change and going green sections of five corporate tourism websites discussed climate change impacts and greening tourism businesses by reducing emissions, supported by industry examples/case studies, tools, resources, consultants (WA, Tasmania) and other climate change links (Table 2).

Table 2 Response to Climate Change (CC) by State Government Tourism Agencies

	Tourism Queensland	Tourism Victoria	Tourism Tasmania	Tourism WA	Tourism NT
Website	'Sustainability & Climate Change'	'Tourism Excellence'	'Climate Change'	'Climate Change'	'Going Green' 'Outback Offsets'
Climate Change Information	What's the fuss about CC? What must I do? What can I do in my business? Who can help? The Facts: Buzz words, Case studies, Fact sheets, News & media, Resources & key links	CC & your tourism business, Planning for CC impacts, What can you do as a business to reduce the rate of CC? Further information	CC & sustainable tourism, Tools & tips, Certification schemes, Industry examples, Green marketing, Green events & venues, Consultants, Useful websites	CC, Industry examples, Consultants, Tools & resources, Green marketing, Green events, National Action Plan	Going green, Getting started, Greening your business, Get help to go green, Certification programs, Green news, Outback Offsets
Climate Change Fact Sheets	Understanding CC Offsetting Your Carbon Footprint ¹				CC Overview How Will CC Impact Tourism? Carbon Offsetting
Programs	Sustainable Regions Program Tourism Environmental Indicators (2010)	Tourism Destination Carbon Footprint study	Green TEA-2009 Green Tourism (2010)	Carbon Footprint Pilot Study (2009)	Outback Offsets (2008/09)
Tourism Strategies	Queensland Tourism Strategy 2006-16 Tourism Action Plan to 2012	Environmentally Sustainable Tourism Strategic Plan 2009-2012 Victoria's Nature-based Tourism Strategy 2008-12	Tourism 21 Strategic Business Plan 2007-2010		Five Year Tourism Strategic Plan 2008-2012

1. Other TQ fact sheets on climate change/CO₂ emissions: The Sustainability Checklist; Sustainability, Triple Bottom Line & 'Greenwash'; Comparing Environmental Benchmarking and Certification Programs; Tourism Environmental Indicators; Your Regulatory Requirements

Two agencies had specific fact sheets about climate change and tourism, and carbon offsetting (Tourism NT, 2009a, b; Tourism Qld, 2009a, b). Tourism Queensland had also developed a *Climate Futures* scenario toolkit for coastal tourism operators (TQ & CSIRO, 2009). Tourism Australia (2010) listed the *Climate Change Guide* on the sustainable tourism section of their website. The South Australia Tourism Commission website had one page titled 'Green SA' that mentioned the climate change certification program and the WOMADelaide festival offsetting carbon emissions. The Tourism NSW website had one brief 'Go Green' page that mentioned climate change, the NSW Greenhouse Gas Reduction Scheme and carbon credits. The Australian Capital Tourism website had no reference to climate change or sustainability policies or practices.

Carbon Mitigation by Tourism Agencies

Various carbon mitigation or carbon reduction initiatives were suggested by state government tourism agencies on the climate change or going green sections of their websites (Table 3). This included information for tourism operators about sustainability measures and emissions reduction initiatives, supported by fact sheets, industry examples, resources and other links. Only one agency, Tourism NT, measured and reported their own emissions since 2007 in annual reports, with greenhouse gas intensity, energy and paper usage for Tourism House Darwin along with greenhouse gas emissions by vehicles and overall fleet composition. Tourism Victoria planned to start auditing their carbon footprint across the organisation. Other carbon-related programs

implemented by state tourism agencies were sustainable regions and environmental indicators in Queensland (TQ, 2010b, c, d), Green Tourism (2010) in Tasmania, a carbon footprint study in WA (2009), and an Outback Offsets program for the NT (2008/09). The main carbon reduction tools suggested by tourism agencies were Climate Action Certification, ecoBiz, Earthcheck and Greenhouse Challenge Plus, along with state government climate change or sustainability departments and other consultants. The key drivers for carbon initiatives implemented by state tourism agencies were the national action plan on tourism and climate change, state policies or action plans on climate change, the impacts of climate change on tourism, higher costs for operators in a proposed Carbon Pollution Reduction Scheme (CPRS), and growing consumer awareness of climate change.

Climate Change Tourism Programs

Four tourism agencies had implemented specific programs addressing climate change impacts and emissions reductions by tourism operators (Qld, WA, NT and Tasmania). Tourism WA conducted a Carbon Footprint Pilot Study of four West Australian tourism businesses in 2009. These operators were: large accommodation (>50 rooms); small accommodation (<5 rooms); accommodated tour (>40 people); and a day tour (20 people). A consultant, Carbon Neutral, measured the carbon footprint of these four WA tourism businesses. Scope 1 or vehicle fuel was 65-97% of emissions for tours, while Scope 2 or electricity was 61-85% of emissions for accommodation. Other Scope 3 emissions were from consumables and waste disposal, plus business and staff travel. This carbon footprint study recommended transport operators use cleaner fuels such as biofuels and energy efficient vehicles, while accommodation operators should reduce energy use and purchase renewable energy. 'Reducing energy consumption, using more renewable energy and purchasing carbon offsets are the key steps towards becoming low carbon enterprises' (Tourism WA, 2010b). Tourism Victoria also planned to conduct a Tourism Destination Carbon Footprint study.

In 2009, Tourism Tasmania supported a Green TEA (Tourism Environmental Audit) of 35 tourism operators in the Huon Valley region. Assisted by EC3 Global, the businesses reduced their carbon footprint through reduction of energy, waste, and water usage. Greenhouse gas emissions saved by operators were equivalent to taking 24 cars off the road for a year. A larger Green Tourism project was established in 2010 with a Climate Connect Grant. It will involve 85 Tasmanian tourism operators and use the Earthcheck logo for emissions auditing and reductions. Key aims of this project were improving the environmental performance of tourism enterprises and helping to combat climate change (Green Tourism, 2010).

Tourism Queensland (TQ) implemented a Sustainable Regions Program during 2009 based on improving the environmental performance and emissions reductions of tourism operators. The program was developed in partnership with EC3 Global, ecoBiz, Ecotourism Australia, Regional Tourism Organisations and local councils. Sustainability initiatives based on ecoBiz involved over 70 tourism operators in six regional areas: Magnetic Island (n=19); Airlie Beach (n=16); Agnes Water and 1770 (n=16); Stradbroke Island (n=14); Mackay (n=5); and Winton (n=13). The Winton operators also formed a Climate Smart Cluster Program and received a grant under ecoBiz guidelines. A report on four regions in the Sustainable Regions Program (Airlie Beach, Mackay, Stradbroke and Winton) found 49 tourism operators planned to reduce their carbon footprint, 28 operators completed a baseline assessment, 19 businesses completed a carbon footprint, 14 planned to invest in green technology and three businesses planned to offset their emissions (EC3 Global, 2009). A related climate change initiative in 2009 was *The Biggest CarbonLoser* funded by a Low Carbon Diet grant that involved 38 participants in the Scenic Rim region of southeast Queensland. The TQ website includes sustainability case studies of tourism operators in both of these programs.

Table 3 Carbon Mitigation by Australian State Government Tourism Agencies

	Carbon Programs	Key Drivers	Carbon Tools
Tourism Queensland	'Sustainability & Climate Change' website Sustainable Regions Program Tourism Operator Environmental Indicators Benchmark 2010 Offsetting Your Carbon Footprint fact sheet	Impacts of CC CPRS National Carbon Offset Standard Qld Climate Smart Adaptation Action Plan National Action Plan on Tourism & Climate Change	Carbon Reduction Institute Climate Action Certification Dept of Climate Change Earthcheck ecoBiz EC3 Global GHG Protocol NABERS
Tourism NT	'Going Green' website 'Outback Offsets' www.outbackoffsets.com 'Tourism – Make the Switch' (08/09) (renewable energy) Carbon Offsetting fact sheet Report agency emissions	CPRS Consumers & CC Impacts of CC Five Year Tourism Strategic Plan 2008-2012 NT govt Climate Change Policy & Coordination Unit National Action Plan on Tourism & Climate Change	Alice Solar City Climate Action Certification Earthcheck ecoBiz NT Greenhouse Challenge Plus NABERS Hotel PE International (Outback Offsets)
Tourism WA	'Climate Change' website Carbon Footprint Pilot Study (2009)	Consumers & CC Impacts of CC WA Office of Climate Change National Action Plan on Tourism & Climate Change National Climate Change Adaptation Framework Climate Change Guide	Carbon Neutral Dept. of Climate Change DEWHA GHG Protocol ISO Standard Sustainable Infrastructure Australia (SIA) WA Small Business Development Corporation
Tourism Victoria	'Tourism Excellence' website Tourism destination carbon footprint study Audit own carbon footprint	Impacts of CC Consumers & CC National Climate Change Adaptation Framework National Action Plan on Tourism & climate change CPRS Our Environment, Our Future (Vic. govt strategy)	CarbonDown Carbon Innovators Network Climate Action Certification Greenhouse Challenge Plus Grow Me The Money Sustainability Victoria
Tourism Tasmania	'Climate Change' website Green Tourism www.greentourism.com.au	Consumers & CC National Tourism & Climate Change Taskforce Tas Climate Change Strategy Reducing Tasmanian Government's Carbon Footprint CPRS	Climate Change Office Tas. Climate Managers Earthcheck EC3 Global EcoSmartBiz Greenhouse Challenge Plus Tony Charters & Associates
SA Tourism Commission	Green SA Environmentally Sound Technology Resources	CPRS & higher costs Promote low carbon tourism	Climate Action Certification

Notes: CC = Climate change; CPRS=Carbon Pollution Reduction Scheme; DEWHA = Department of Environment, Water, Heritage & the Arts; GHG = Greenhouse gas; ISO = International Standards Organisation; NABERS = National Australian Built Environment Rating System

Tourism Queensland also developed a set of Tourism Environmental Indicators in 2009 with two core indicators including: 1. Carbon footprint of the Queensland tourism industry, and 5. Response to climate change by tourism operators (EC3 Global, 2009; TQ, 2010b). The purpose of Indicator 1 was to support efforts to minimise carbon emissions by the tourism industry, and of Indicator 5 was to demonstrate operator commitment by implementing adaptation and mitigation measures. An additional comprehensive indicator included: 10. Carbon offsetting, based on consumer environmental concerns and the number using offsets. A baseline set of industry responses to these indicators was determined with a *Tourism Operator Environmental Indicators Benchmark* survey of 986 businesses completed in 2010. The operators were mainly accommodation (63%), attraction (18%) or tour companies (13%) and 90 percent were small or medium enterprises (n=888). With regard to climate change, 38 percent strongly agreed it was important to reduce the carbon footprint of their tourism business while 35 percent strongly agreed their business environmental initiatives will positively impact on climate change. However, only one in 10 operators measured their carbon footprint, mainly in the transport (37%) and tour (17%) sectors, predominantly large (38%) or medium (25%) businesses, and Brisbane operators (21%). Only one in 10 tourism operators had purchased carbon offsets, mainly large businesses (21%) and those in the Mackay area (22%), while just six percent of all tourism operators planned to purchase carbon offsets in the next year (TQ, 2010c).

Outback Offsets (nd) was a pilot carbon offset program implemented by Tourism NT in 2008/09. It involved three tour operators, Adventure Tours Australia, Wayoutback Safaris and Connections Safaris, representing around 40 percent of touring operations in Central Australia. Two greenhouse gas life cycle assessments for the three tour operators measured their emissions from office electricity, business travel (car/air), tour vehicles (diesel), LPG, waste water, solid waste, and dry cleaning (PE International, 2009). The carbon footprint of each tour operator was measured for 2007/08 as a benchmark, with total carbon emissions generated for 2008/09 measured as 3,835tCO₂. Tourism NT supported these three tourism businesses to become carbon neutral during 2008/09, paying for carbon credits from LMS Generation, a greenhouse friendly abatement provider approved by the Australian government, for the Shoal Bay landfill gas generation project in Darwin. These carbon credits were provided at no cost to the consumer, with an assurance statement from PE International (2009) verifying that Tourism NT purchased emission reduction units (ERUs) from LMS Generation to offset the non-reducible emissions of the three tour operators. Two of the tour operators continued to offset their emissions in 2010/11, with Intrepid Connections purchasing credits through Cleaner Climate for renewable energy hydro projects (India, China) and a rice husk biomass project (Thailand). Wayoutback Safaris continued their carbon offset program with LMS Generation, marketing this carbon neutrality on their brochure with a green footprint logo, and the motto 'offset your carbon emissions for free.'

To test consumer response to the Outback Offsets program, PE International conducted a survey of 4,589 visitors with the three operators during 2008/09. Seventy percent (70%) of respondents were visitors under 40: 18-29 years (48%) and 30-39 years (22%), with 19percent 40-59 years and eight percent over 60. The visitors were mainly from Europe (43%), UK (17%), Australia (16%), other countries (10%), USA (7%), Canada (4%), and Japan (2%). One third (31%) were aware their tour had a carbon offset program, while 53 percent were strongly (14%) or somewhat (39%) influenced by the offset program in booking a tour.

Visitors most influenced by awareness of Outback Offsets were the: French (64%), German (53%), Australian (51%), USA (50%) and UK visitors (41%). One in six visitors (16%) had offset carbon emissions on other parts of their holiday activities such as tours, and on flights. Visitors aged 30-39 were most aware of Outback Offsets (34%), followed by those 40-59 (31%), 18-29 (30%), and over 60

(26%). Australians (36%) were more aware than international visitors (29%), with the USA (40%), France (32%), Germany (30%), and UK (28%) the most aware (Tourism NT, 2009c). The Outback Offset program featured as part of the 2008 first global Red Centre Way campaign. This offset project aimed to test the influence of carbon neutrality on travel purchasing and to 'provide the Northern Territory with an edge over competing destinations in attracting environmentally aware travellers from long-haul markets' (Tourism NT, 2008:8). A survey of 1,500 visitors in five key international markets expressed concern about climate change; few had paid for an offset, but might take this action in future (Tourism Australia, 2009).

Climate Change in Tourism Strategies

Four state government agencies included climate change in their strategic tourism plans (NT, Tasmania, Qld and SA). The *Queensland Tourism Strategy* focused on 'dealing with climate change' in terms of adapting to negative impacts, coral bleaching, and other industry threats (TQ, 2006). The *Queensland Tourism Action Plan to 2012* listed industry actions such as '5-15 Implement a range of sustainable tourism initiatives to assist industry deal with climate change, including progress the National Tourism Climate Change Action Plan' and scenario planning to 'minimise the regional effects of major shocks such as climate change' (TQ, nd). In addition, one key priority in the *Tourism NSW Annual Operating Plan 2009-2010* was to 'advise tourism industry on sustainability including adaptation to climate change' (Tourism NSW, 2009).

In contrast, the section on 'climate change and sustainability' in the *South Australian Tourism Plan 2009-2014* focused on opportunities for the tourism industry in energy and waste efficiency and in promotional and branding prospects for destinations with low emission tourism (SATC, 2009). The Northern Territory's *Five Year Tourism Strategic Plan (2008-2012)* has a section on 'the environment and climate change' highlighting growing concern for climate change that impacts on travel behaviour among key visitor markets. Tourism NT sees a competitive advantage in responding to this climate change issue with one key action of the NT's tourism plan to 'Explore opportunities to develop carbon abatement and carbon offset schemes' (Tourism NT, 2008b).

In Tasmania, the *Tourism 21 Strategic Business Plan 2007-2010* section on 'climate change and our environment' also focused on opportunities for the tourism industry 'to offer measurable offsets and reassurance to travellers concerned about the carbon footprint created by their travel' (TICT, 2007:9). In regard to branding, Tourism Tasmania would also develop a climate change strategy that 'considers mitigation and adaptation measures of direct relevance to the Tasmanian tourism industry, including innovative ways to market Tasmania as a climate friendly destination' (TICT, 2007:12). The *Australian Capital Tourism Five Year Strategic Plan 2009-2013* has just three mentions of climate change, one of carbon and one of greenhouse gas emissions (AC Tourism, 2009).

Climate change is an integral part of Tourism Victoria's plans for environmentally sustainable tourism and for nature-based tourism. *Victoria's Nature-based Tourism Strategy 2008-2012* encouraged the nature-based tourism (NBT) sector and key NBT destinations to implement carbon reduction initiatives and sustainable practices to help combat climate change. Sustainable practices included the use of renewable energy (solar and wind), carbon neutrality and offsets. Other actions were to increase visitor information and marketing of climate change initiatives by the NBT sector, and to identify areas vulnerable to the impacts of climate change. A section in this strategy on 'The climate change challenge' noted the tourism industry needed to 'prepare and actively engage in efforts to reduce greenhouse gas emissions' as 'visitors are now seeking experiences and destinations that are actively reducing their impacts on climate change and the size of their carbon footprint' (Tourism Victoria, 2008:12).

Victoria's *Environmentally Sustainable Tourism Strategic Plan 2009-2012* focused on assisting the tourism industry to mitigate the impacts of climate change. A section on 'Tourism's Carbon Footprint' noted the need to measure and reduce the carbon footprint of tourism in Victoria, and to audit Tourism Victoria's own carbon footprint. Two key performance indicators for this strategic plan were an 'Increase in number of tourism businesses participating in carbon measurement, reduction and offset programs,' and the 'Number of businesses actively seeking advice on adaptation to climate change issues.' Tourism Victoria took on a leadership role in advocating 'green tourism' and 'encouraging recognised carbon offset programs' for operators. A section in this plan on 'Assisting the Tourism Industry to Adapt to Climate Change' encouraged tourism businesses and destinations to anticipate and plan for climate change impacts. Specific actions in this plan were to develop a carbon footprint toolkit for businesses, prepare notes for event organisers to measure and reduce their carbon footprint, and provide advice to tourism organisations on engaging with tourism businesses about climate change issues (Tourism Victoria, 2009).

Carbon Offsetting in Australian Tourism

All the government tourism agencies provided advice to tourism operators about measuring, reducing and offsetting the carbon emissions of their business (Table 4). The tourism agencies recommended carbon offsetting as part of green business, green marketing, green events, and creating a green experience. Two agencies (Qld, NT) had detailed fact sheets about carbon offsetting for tourism businesses. 'A carbon offset is any project that indirectly reduces greenhouse gas emissions at one source by investing in greenhouse gas emissions reduction elsewhere' (Tourism NT, 2009b). The National Tourism and Climate Change Taskforce also included a Carbon Offsetting committee. The types of carbon offset projects recommended by tourism agencies were: energy saving technology, renewable energy, tree planting (Tourism Australia); forestry, renewable energy, energy efficiency (Qld); renewable energy, energy efficiency, forestry, landfill gas, waste diversion (NT); renewable energy (Vic); renewable energy, plant native species (Tas); and planting trees (WA, NSW, SA).

Tourism Queensland recommended state-based carbon offset projects such as tree planting by ecoFund Queensland, a new government carbon broker. Tourism Tasmania also endorsed Tasmanian offsets by planting native species to benefits parks and the environment. Tourism NT recommended Australian carbon offsets for their economic and biodiversity benefits. A range of carbon offset providers were suggested by tourism agencies such as Greenfleet, Greenhouse Friendly, Greening Australia and other carbon brokers or offset guides. Industry examples of carbon offsetting and carbon neutral businesses included Hidden Valley Cabins and Big Cat Green Island Cruises (Qld), Wayoutback Desert Safaris, Connections Safaris, and Adventure Tours Australia in the Outback Offsets program (NT); Cullen Wines (WA); Go West Tours and Australian Formula 1 ING Grand Prix (Vic); Taste Festival (Tasmania); and WOMADelaide (SA). Tourism emissions from fuel usage, air travel, electricity, LPG and waste were offset mainly by tree planting programs, or by landfill gas generation (NT). In Queensland, only one in 10 tourism operators had purchased carbon offsets, mainly large businesses (21%), while six percent planned to purchase carbon offsets in the next year (TQ, 2010c).

Table 4 Carbon Offsetting Advice by Australian Government Tourism Agencies

	Carbon Offset Information	Carbon Offset Providers	Carbon Offsets by Tourism Operators
Tourism Australia	Creating a 'green' experience (energy saving technology, renewable energy, tree planting)	Carbon Offset Guide Carbon Neutral, Cleaner Climate, Climate Friendly, Climate Revolution, CO2 Australia, Easy Being Green, Elementree, Greenfleet, Green Globe	
Tourism Queensland	Offsetting Your Carbon Footprint fact sheet Qld carbon offsets (forestry, renewable energy, energy efficiency)	Climate Friendly ecoFund Qld Greenfleet Australia	Hidden Valley Cabins Big Cat Green Island Reef Cruises (tree planting) Daintree Discovery Centre (tree planting) Europcar (tree planting)
Tourism NT	'Outback Offsets' Carbon Offsetting fact sheet (renewable energy, energy efficiency, forestry, landfill gas, waste diversion) Australian offsets	Carbon Offset Guide Carbon Offset Watch EPA Victoria Greenhouse Friendly LMS Generation (Outback Offsets)	Wayoutback Desert Safaris, Connections Safaris, Adventure Tours Australia (Outback Offsets) Qantas, Virgin Blue, World Expeditions, Europcar
Tourism WA	Green marketing (business, consumers) Green events (offset with trees)	AustraliaCarbon, Beyond Neutral, Carbon Conscious, Carbon Neutral, Carbon Planet, Earthcheck, EC3 Global, Greensense, Carbon Offset Guide, Carbon Offset Watch	Cullen Wines (carbon neutral-air travel & fuel usage emissions)
Tourism Victoria	'encourage recognised carbon offset programs' (renewable energy)	Greenfleet Australia GreenPower EPA Victoria	Go West Tours (trees) Australian Formula 1 ING Grand Prix 2009 (trees) Intrepid World Travel
Tourism Tasmania	Green event policy (renewable energy) Tourism 21 Plan Tas. offsets - parks & environment (plant native species)	Carbon Reduction Institute (NoCO2) Climate Friendly Hydro Consulting Greenhouse Friendly Greening Australia Sustainable Living Tasmania	Taste Festival (stallholders offset LPG, electricity & waste) Rainbow Retreat (carbon neutral)
Tourism NSW	Go Green (tree planting)	CO2 Australia Greenhouse Friendly NSW Greenhouse Gas Reduction Scheme	
Tourism SA	Green SA (tree planting)	Greening Australia	WOMADelaide (7,000 trees planted)

Discussion

This paper evaluated how nine government tourism agencies are responding to the issue of climate change in Australia. These government tourism agencies are addressing climate change issues, by promoting sustainability measures, carbon reduction initiatives and carbon offsetting for tourism operators. Tourism agencies for Queensland, the Northern Territory, Victoria, Western Australia and Tasmania have been the most pro-active in responding to climate change issues. Queensland has the most online information about climate change, sustainability, carbon offsetting and going green, with emissions reductions initiatives for tourism part of the Sustainable Regions Program, Biggest CarbonLoser and Tourism Environmental Indicators. The Northern Territory also has a significant amount of website information and fact sheets about climate change and managed the Outback Offsets program.

Victoria has integrated climate change issues into nature tourism and environmentally sustainable tourism plans with climate change information to be added to their website. Both Tasmania and Western Australia have a climate change section on their corporate website, with a green tourism program in Tasmania and a carbon footprint pilot study in WA. State tourism agencies recommend carbon offset projects based on forestry or renewable energy. Climate change tourism responses are more developed by tourism agencies in Australian states with climate change policies, destinations vulnerable to the impacts of climate change (e.g. Great Barrier Reef, Qld), or dependent on long haul travellers (Qld, WA, NT). State agencies are implementing many of the actions suggested in the Sustainable Tourism CRC study: *The Impacts of Climate Change on Australian Tourism Destinations* (Turton et al, 2009). These include information about dealing with climate change, greener business practices, developing low footprint tourism and carbon offsets, and marketing clean green products.

Conclusions

The National Climate Change Adaptation Framework identified tourism as one key sector vulnerable to the impacts of climate change in Australia. This paper evaluated how nine government tourism agencies are responding to the issue of climate change in Australia. Information on climate change, sustainability and going green was drawn from the corporate websites, annual reports, tourism plans, fact sheets, and case studies produced by these government tourism agencies from 2007-2010. The paper critically evaluated how government tourism agencies are addressing climate change issues, through emissions reduction programs and carbon offsetting schemes for tourism operators. Climate change tourism responses are more comprehensive in Australian states with climate change policies, vulnerable to the impacts of climate change or dependent on long haul travellers.

Future research should focus on what can be done to support and ensure best practice responses to climate change are effectively adopted by all Australian government tourism agencies. A comparison with international tourism agencies to determine methods that are most effective for encouraging tourism operators to implement carbon reduction and offsetting initiatives would also be relevant. Further research is also required on how carbon footprint studies and carbon offset projects impact on travel behaviour and decision making by tourists visiting key Australian destinations.

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