The New Green Age: Carbon Mitigation by Queensland Tourism Enterprises

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The New Green Age: Carbon Mitigation by Queensland Tourism Enterprises

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Abstract

Climate change and carbon mitigation are growing issues for the tourism industry. Green tourism enterprises are implementing eco-efficiency measures in energy, water and waste management to reduce operating costs and carbon emissions. This paper reports on carbon mitigation actions adopted by environmentally certified Queensland tourism operators (n=83). It first reviews carbon mitigation responses in Australian tourism, including research on carbon emissions by tourism sectors and carbon reduction programs supported by Tourism Queensland. It then describes the development of a carbon survey for Queensland tourism enterprises including accommodation, tour operators, attractions, and convention centres. The paper presents survey results profiling operator attitudes to climate change, green business training, emissions auditing and carbon mitigation actions, motives for emissions reduction, and carbon offsetting. It compares findings for key tourism sectors and discusses operator motives for adopting carbon mitigation actions or offsetting. Key challenges and opportunities for carbon reduction by tourism enterprises are noted.

Keywords: climate change, carbon mitigation, eco-efficiency, green practices, tourism SMEs, Queensland

Climate Change and Carbon Mitigation in Australian Tourism

Climate change and carbon mitigation is a growing issue in Australian tourism (Forsyth et al, 2008; Dwyer, Forsyth, Spurr & Hoque, 2010; Hoque et al, 2010, Zeppel & Beaumont, 2011a). "Mitigation of climate change involves taking actions to reduce greenhouse gas emissions and to enhance carbon sinks" (STCRC, 2009, p. 5). Recent Australian tourism strategies and reports include advice on greenhouse gas mitigation measures for tour operators and recommend carbon offsetting (DRET, 2008, 2009; QTIC, 2008; TTF, 2008). The Australian tourism industry is vulnerable to the impacts of climate change such as coral bleaching on the Great Barrier Reef and declining snow cover in the Australian Alps (STCRC, 2009). Growing consumer concern about carbon emissions from air travel and tourism is also an issue for long-haul destinations such as Australia and New Zealand (Higham & Cohen, 2011). A national action plan for tourism and climate change focused on a tourism industry prepared for future constraints on carbon (DRET, 2008). The *Climate Change Guide: Mitigation and Adaptation Measures for Australian Tourism Operators* provided a rationale for implementing mitigation measures, and examples of specific emissions reductions that could be initiated (DRET, 2009). The 2011-12 priorities for the *National Long-Term Tourism Strategy* also focus on building industry resilience to the economic impacts of climate change while increasing small business adoption of climate change mitigation initiatives (DRET, 2011). A report by the Tourism and Transport Forum highlights the economic impact of a carbon tax on the Australian tourism industry, particularly domestic aviation and tourist accommodation, and the need to reduce emissions to both protect natural assets and improve long term competitiveness (TTF, 2011).

The *National Greenhouse and Energy Reporting Act 2007* also requires larger tourism enterprises such as airlines, transport providers, large attractions and hotels to report their emissions. For tourism businesses, mitigation involves reducing greenhouse gas emissions from energy and fuel, water and waste, along with carbon offsetting of residual emissions. "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, 2009). The National Tourism and Climate Change Taskforce established in 2007 recommended that tourism agencies develop emissions management tools and provide advice about carbon offsets for operators. The national action plan for tourism and climate change noted that offsetting emissions was an important strategy for the aviation and tourism industries but required credible measurement tools and offset schemes (DRET, 2008). This action plan

recommended tourism operators utilise government-accredited carbon offsets, while noting the effectiveness of carbon offset schemes in reducing carbon footprints and enhancing tourism's environmental performance needed to be assessed (Holleran, 2008). The *Climate Change Guide* for tourism operators recommended that they purchase accredited carbon offsets after taking all other measures to mitigate or reduce their emissions (DRET, 2009). Offset brokers sell carbon credits from renewable energy, energy efficiency and reforestation.

Research on carbon mitigation in Australian tourism includes energy efficient tourist itineraries by wholesalers (Becken, 2004); greenhouse emissions and carbon trading at North Queensland hotels (Curtis, 2002); renewable energy at eco-certified accommodation (Nelson, 2010); tourist operator attitudes to using renewable energy (Dalton, Lockington & Baldock, 2007); carbon offsetting by business event companies (Mair & Jago, 2009); and greenhouse gas emissions from marine tours (Byrnes & Warnken, 2006; Zeppel, 2011). This research examines one tourism sector or one type of carbon mitigation such as renewable energy. This paper though evaluates carbon mitigation actions by different tourism sectors in Queensland.

Tourism Queensland and Carbon Mitigation Programs

Tourism Queensland (TQ) has developed an emissions calculator and implemented a range of programs that support operators in reducing their carbon emissions and costs (Phillips, 2009). These carbon tools include fact sheets on climate change (TQ, 2009a) and carbon offsetting (TQ, 2009b), website resources on sustainability and climate change (TQ, 2010a), and a *Climate Futures* scenario toolkit for coastal tourism operators to assess and address climate risks (TQ & CSIRO, 2009). The *Queensland Tourism Strategy* highlighted the industry need to address climate change impacts such as coral bleaching on the Great Barrier Reef (TQ, 2006). The Queensland *Tourism Action Plan to 2012* listed industry actions such as "sustainable tourism initiatives to assist industry deal with climate change", and scenario planning to "minimise the regional effects of major shocks such as climate change" (TQ, n.d.). These climate actions by Tourism Queensland are also because "consumers are starting to think about climate change and the impact of carbon on the environment" (Phillips, 2009).

The Sustainable Regions Program was implemented during 2009 to improve the environmental performance and emissions reductions of tourism operators (TQ, 2010b). This 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). 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 Queensland government Low Carbon Diet grant that involved 38 participants (mainly tourism enterprises) in the Scenic Rim region of southeast Queensland (Sustainable Scenic Rim, 2010). The Tourism Queensland website includes sustainability case studies of tourism operators in both these low carbon programs.

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, 2010c). 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 adopting adaptation and mitigation measures. An additional indicator included: 10. Carbon offsetting, based on consumer environmental concerns and the number using offsets (but not operators). 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% were small or medium enterprises (n=888). With regard to climate change, 38% strongly agreed it was important to reduce the carbon footprint of their tourism business while 35% strongly agreed their business environmental initiatives will positively impact on climate change. However, only one in ten 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%). The operators implemented a range of energy, water and waste eco-efficiency measures. Only one in 10 tourism operators had purchased carbon offsets, mainly large businesses (21%) and those in the Mackay area (22%); just 6% of operators planned to purchase carbon offsets in the next year (TQ, 2010d).

Methodology

A carbon mitigation survey was developed based on a website review of climate change, carbon abatement, green business and sustainability practices promoted by Tourism Queensland and other government tourism agencies in Australia (Zeppel & Beaumont, 2011b). The websites of ecotourism certified operators were also reviewed for their carbon mitigation actions, along with the green business practices recommended in eco-certification programs, and the eco-efficiency (i.e. energy, water, waste) measures listed in Tourism Queensland's environmental indicators benchmark survey in 2010 (TQ, 2010c, 2010d). These provided the basis for the types of carbon mitigation actions listed in the tourism survey, along with other questions about operator motives for emissions reduction actions and carbon offsetting. In this survey, "A carbon offset is an investment in a project or activity that reduces greenhouse gases" (QTIC, 2008). There were 24 questions in the final survey in three main sections: your tourism business, climate change (emission audits and mitigation actions), and carbon offsetting. A pilot survey was also conducted of five nature-based Queensland tourism operators without eco-certification.

The carbon mitigation survey of Queensland tourism operators (n=83) was conducted during January to October 2011. The target group for this survey was tourism operators with environmental credentials such as Eco Certification or Climate Action Certification (Ecotourism Australia); Eco Friendly Star accommodation (AAA Tourism); Earthcheck, Green Globe, or ecoBiz accreditation; or members of Savannah Guides and Planet Safe in North Queensland. These certification programs promote environmental best practice and eco-efficiency actions. Emissions auditing is required by ecoBiz, Earthcheck, Green Globe and for Climate Action certification. The eco-certified tourism operators were located on website databases listing certified members. The carbon mitigation survey was forwarded to 380 tourism operators by email or post, along with some phone interviews or face-to-face interviews. There was a response rate of 25% with 83 surveys by environmentally certified tourism enterprises. The respondents to this carbon survey were Eco certified (n=58), Eco Friendly Star rated (n=14) or had Earthcheck/ecoBiz accreditation (n=11). The next section presents results from the carbon survey of Queensland tourism enterprises, including comments from operators.

Results

The Tourism Enterprises

A profile of the tourism enterprises which responded to the carbon mitigation survey is set out in Table 1. Nature tourism businesses were located in the rainforest, reef and savannah destinations of Northern and Central Queensland (n=43), or in national park, rural, and coastal areas of Southern Queensland (n=38). There were 16 marine tourism enterprises including diving, reef tours, sailing, kayaking, whale watching, and one aquarium. Other accommodation and convention centres were located in the urban areas of Cairns, the Gold Coast and Brisbane.

Table 1 Profile of the Queensland Tourism Enterprises

Type of Business:	Accommodation	(n=40) 48%
	Tour Operator	(n=31) 37%
	Attraction	(n=8) 10%
	Convention Centre	(n=3) 4%
	Tourism Organisation	(n=1) 1%
Size of Business:	Small Business: 1-4 staff	(n=33) 40%
	Medium Business: 5-20 staff	(n=24) 29%
	Large Business: over 21 staff	(n=26) 31%
Role in Tourism Business:	Owner/Operator	(n=45) 54%
	Manager	(n=25) 30%
	Other*	(n=13) 16%

* Other staff = Environmental, business, operational, venue

Age of Business:	Accommodation:	1-78 years, mean = 17.4
	Convention Centre:	7-16 years, mean = 12.6
	Tour Operator:	2-38 years, mean = 15.4
	Tourist Attraction:	3-120 years, mean=16.7*
	(*excluding attraction 120 years)	
	Tourism Organisation:	42 years

Business Certification:	ECO certification (including Eco Friendly Star)	(n=62)
	Earthcheck	(n=13)
	Climate Action	(n=9)
	Green Globe	(n=8)
	Planet Safe (TTNQ)	(n=8)
	AAA Tourism	(n=8)
	TAAL	(n=7)
	Savannah Guides	(n=5)
	ISO14001 EMS	(n=3)
	Other*	(n=7)

* Other = Marine Safe (2) CRVA/Gumnut (2), ecoBiz (1), Respect our Culture (1), Nature Refuge (1)

Attitudes to Climate Change and Reducing Carbon Emissions

The majority of surveyed tourism enterprises (n=73, 88%) agreed that climate change was an important issue for the tourism industry. A few operators (n=8, 10%) thought climate change may be an important tourism issue, while one operator each stated 'not sure' and no' on this. The 'no' respondent believed climate change was a natural process over millions of years; while the 'not sure' respondent commented there were *two extremes to the argument. No apparent middle ground*. Comments by those that responded 'maybe' indicated they wanted more research, were unsure about causes or credibility of information. They also referred to customer perceptions of climate change, preference for environmentally friendly practices or buying tourism products on price as more important factors for tourism. Operators that agreed with climate change being an important tourism issue referred to impacts on the reef, weather, wildlife, and nature-based destinations; protecting the environment; customer and industry expectations of sustainable tourism practices; the impact of rising energy costs and necessity for tourism businesses to adopt eco-efficiency measures. A few respondents also commented on the carbon footprint of travel and the impact of a carbon tax. One reef tour operator stated *Climate change will affect us all but correct reporting is important to prevent hysteria, its being over marketed and de-sensitising pax* (passengers).

Most tourism enterprises (88%) either strongly agreed (n=44, 54%) or agreed (n=28, 34%) that it was important to reduce the carbon footprint and emissions of their tourism business. Nine operators (11%) were neutral on this point, one noting that their resort development was based on being ecologically sustainable. One accommodation manager strongly disagreed with this point, did not think climate change was important, and their only eco-efficiency measure was the installation of CFL bulbs at their property solely motivated by cost savings. The main types of carbon reduction or green business training undertaken by tourism enterprises are listed in Table 2. Other types of green business learning were from forums and seminars, the Nature Refuge program, World Heritage listing, EC3 Global, Gumnut awards, research on ecosystem services, responsible business training and the Sustainable Scenic Rim program. One large attraction provided environmental awareness training for staff and contactors. Two operators had no training as they were small and were unable to travel away.

Table 2 Carbon Reduction or Green Business Training Undertaken by Queensland Tourism Enterprises

TQ climate change workshop	(n=22)
ecoBiz workshop	(n=11)
Climate Smart Business	(n=11)
TQ Sustainable Regions Program-TQ	(n=9)
TQ Climate Futures workshop	(n=9)
Qantas Sustainable Tourism seminar	(n=8)
AMPTO Acclimatise your business workshop	(n=5)
EPA Low Carbon Diet	(n=4)
Greenhouse Challenge Plus	(n=4)
A-Z of Going Green-MEA	(n=1)

Some 34 tourism business had completed an audit of their carbon emissions/energy usage, either with an online emissions calculator (n=19) or they had employed a consultant to audit their emissions (n=15). One attraction had an energy company do an audit of their emissions. Another 28 tourism operators planned to do an emissions audit in the next 12 months while 23 tourism enterprises did not think an emissions audit was necessary for their business. One stated they would *rather spend $ on action rather than audits* while another commented *not required-NGERS calculator reported that our emissions level was below the threshold.* The online calculators that were used by tourism businesses to assess their carbon emissions included: ClimateSmart (n=8), GBRMPA (n=7), ecoBiz (n=4), NGERS (n=3), Greenfleet (n=2), and Greenhouse Challenge Plus (n=2). Other emissions calculators used were by Earthcheck/EC3 Global (n=7), including a Gold Coast City Council pilot project that utilised Earthcheck software, Tourism Queensland (n=2) and the Sustainable Regions Program (n=1).

Carbon Mitigation Practices

Queensland tourism operators have adopted a range of carbon mitigation practices (Table 3). These include lower cost energy efficiency measures such as light bulbs, appliances, and reducing standby power (n=78, 69 & 61), plus recycling and reducing solid waste (n=75). Half of the tourism enterprises were training staff (n=48) or informing visitors about reducing carbon emissions (n=44). Less than half of all surveyed operators have roofing insulation, use room fans or operate new fuel efficient transport (n=39, 38 & 32); choose green suppliers (n=38) or market their actions (n=35). About a quarter of tourism operators have installed solar power; use solar/heat pump hot water heaters; implement other energy initiatives like conserving water, minimising energy use, gas heating or renewable energy; or carbon offset.

Only a few tourism enterprises are using biofuels or driving electric/hybrid-electric vehicles. A few larger tourism businesses (n=10) are purchasing GreenPower from renewable energy. One accommodation owner stated *Would invest in 'Green Electricity' but currently way too expensive; cost should be at least on par with normal tariff rates.* A few enterprises stated they lacked staff resources or had difficulty in measuring/calculating their carbon footprint.

Other energy initiatives by Attractions included: we operate solely on renewable power-hydro and solar; solar pumps, instant gas hot water service; system that regulates ac (air conditioning) to optimum; and building design to allow maximum natural light. Energy initiatives by Tour Operators included: driving practices reduce emissions; gas hot water heater and optimising two generators; and purchase all 4 stroke outboard motors. Energy practices at Accommodation included: low emission gas heating-hot water and cooking; TQAL grant for two solar powered cabins; movement sensors; and local product. The water initiatives reported by tourism enterprises included: reduce water consumption; bore water; rainwater; and rainwater tanks for toilet (Attractions); 200,000 litres of rainwater for washing buses, installed oil/water separator (Tour Operator); low pressure water system; flow restrictors; water harvesting; rainwater tanks; and drought resistant plants (Accommodation).

Table 3 Emissions Reduction Initiatives Implemented by Queensland Tourism Enterprises

Install energy saving CFL bulbs or LED lights	(n=78)
Practise recycling & minimise amount of solid waste	(n=75)
Purchase energy efficient appliances	(n=69)
Switch off appliances at the wall to reduce standby power	(n=61)
Train staff or volunteers on your emissions reduction actions	(n=48)
Provide information to visitors on reducing their emissions	(n=44)
Roofing insulation	(n=39)
Choose suppliers taking actions to reduce their emissions	(n=38)
Use room fans instead of air conditioners	(n=38)
Market the emissions reduction initiatives of your business	(n=35)
Operate new fuel efficient vehicles or vessels	(n=32)
Install solar photovoltaic power	(n=20)
Other energy initiatives	(n=22)
Carbon offsetting	(n=21)
Use solar or heat pump hot water waters	(n=21)
Use ethanol mix or biofuels in vehicles	(n=14)
Drive electric cars or hybrid-electric vehicles	(n=12)
Purchase GreenPower electricity from renewable energy	(n=10)

The main reasons for implementing carbon reduction initiatives at tourism businesses were:

Attract environmentally aware tourists to your business (n=68)
Differentiate your business as a 'climate friendly' tourism product (n=67)
Cost savings (n=59)
Certification or permit requirement (n=52)
Environmental regulations (n=30), and
Other reasons (n=29)

The other reasons stated by tourism operators related to their personal environmental ethic, corporate social responsibility, customer demand, being a role model, and no mains power. A few larger enterprises (n=4) mentioned a business reporting legal requirement, such as carbon emission thresholds in the National Greenhouse Energy Reporting System (NGERS). When responses were ranked by operators from one to four, the first ranked reasons were being a climate friendly tourism enterprise and cost savings along with environmental ethics. The second ranked reason was attracting environmentally aware tourists, with third level responses being a mix of the first three key reasons. The reasons ranked fourth were related to certification requirements (e.g. ecotourism, climate action) and environmental regulations. The other reasons ranked fourth were: *Management and staff personal commitment to being efficient; Management company edict; Acting as a role model for other tourism operators/ local residents*; and *Reinstating heritage values by refurbishing original 1930s hydro.*

Tourism enterprises also stated estimated cost savings from their emissions reduction actions. For smaller tourist accommodation this ranged from $100 a year up to $3,600 per year. For medium to larger tourist accommodation the savings from emissions reduction actions ranged from $10,000 a year, over $20,000 and two saved $30,000 annually. One large hotel reported cost savings of $100,000 a year. Other accommodation providers stated their cost saving was 25% or quite substantial for power. Others stated they had not yet determined their cost savings, no reduction in expenses, *nil to several thousand expense,* and for one lodge not on mains power *none-it would have been cheaper on electricity grid/diesel power.* For Tour Operators, the stated cost savings ranged from $300 per year up to $50,000 annually for a large coach operator (i.e. $300pa, $500, $1,250, $3,000, $10,000, $20,000, $50,000pa). Others noted an average cost reduction of 10%, or *potential long term saving of 5%-10%* after initial outlay costs. One reef tour operator noted a *30% saving on fuel consumption-*

investment of $170,000. Six tour operators stated they did not know what their cost savings were or thought it was minimal: *not compared as always tried to be environmentally friendly* and *not sure – about $50 p.a. off electricity bill & we divert over 26,000 litres of solid waste from landfill through recycling program.* For Attractions, one used renewable power, one had significant savings, and another saved $10,000 a year. Other attractions stated reduced electricity use was offset by price increases and additional costs, or that it cost $100,000 more annually to operate a tourism business in the Daintree without mains power. A convention centre stated their yearly cost savings from eco-efficiency actions was $50,000.

Carbon Offsetting

This section reviews the adoption of carbon offsetting by Queensland tourism enterprises. Major findings are set out in Table 4. The survey found only 24 tourism businesses had participated in a carbon offset program to offset their emissions either partially (n=17) or totally (n=7). One eco-attraction with 100% offsetting stated: *While officially DDC is carbon neutral in reality no business is neutral. A more appropriate term is 'carbon conscious.'* Some 31 tourism enterprises planned to implement carbon offsetting in the next 12 months. An accommodation owner stated *Business should not ask customers to pay for offsets they should implement at own cost.* One attraction stated about offsetting: *Not a major priority so will happen when time and resources permit, really focusing on reducing our carbon footprint.* Another 28 tourism enterprises did not consider carbon offsetting was necessary for their business. Some stated reasons for not offsetting were the tourism business was *Too small with 'negligible' footprint*, or *We really haven't researched the options for carbon offsetting our business,* and *will have an audit done, would decide after audit.* Other reasons were cost, complexity, lack of time, low business emissions from tourism product (e.g. kayaking, sailing, walking, use solar power), no corporate policy, depends on apartment owners, or already offsetting through protecting vegetation and replanting trees. One attraction stated *we already use hydropower & have enough trees planted to offset most of the emissions from our activities.* A marine operator stated *Would like to but struggling to run business & pay off bank loan on new boat that is more enviro friendly.* In contrast, an accommodation provider commented *Poor information & suspicious about carbon offset money actually being used for realistic sequestration projects not going to admin/regulation/govt. coffers/dodgy tax offset schemes.* Another accommodation and grazing enterprise maintained vegetation on their nature refuge but did not register the offsets.

Table 4 Carbon Offsetting by Queensland Tourism Enterprises

Participated in a carbon offset program to offset emissions:

Yes–business emissions partially offset	(n=17)
(Accommodation-8, Tour Operator-7, Convention Centre-2)	
Yes–business emissions totally offset	(n=7)
(Tour Operator-3, Accommodation-2, Attraction-2)	
No–plan to implement offsetting in near future	(n=31)
(Accommodation-16, Tour Operator-9, Attraction-4, Convention Centre-1, Tourism Organisation-1)	
No–carbon offsetting not necessary for business	(n=28)
(Accommodation-14, Tour Operator-11, Attraction-3)	

When tourism business started investing or planned to invest in carbon offset:

2000-2005	(n=6)
2006-2010	(n=15)
2011-2015	(n=15)

Business emissions offset through carbon offset project:

Office electricity	(n=30)
Fuel usage (transport)	(n=28)
Vehicle fuel (staff travel)	(n=26)
LPG cooking gas	(n=19)
Airline travel (staff)	(n=14)
Other*	(n=7)

* Other – collateral, brochures (Tour Operator), energy consumption from meetings (Convention Centre)

Carbon offset project implemented by tourism business:

Own carbon offset/bio-sequestration project	(n=32)
Partnership carbon offset with other organisation	(n=15)
Voluntary carbon offset option for visitors	(n=14)
Purchased Australian carbon credits as offset	(n=13)

Preferred carbon offset method supported by tourism business:

Tree planting	(n=41)
Energy efficiency	(n=41)
Renewable energy	(n=31)
Waste diversion	(n=22)
Landfill gas	(n=3)
Soil carbon	(n=3)

Carbon offset provider supported by tourism business:

Other*	(n=21)
Landcare	(n=15)
Australian Rainforest Foundation	(n=9)
Greening Australia	(n=8)
Conservation Volunteers Australia	(n=6)
Greenfleet Australia	(n=5)
Climate Friendly	(n=3)

* Other – Unsure (4), Land for Wildlife (2), Rainforest Rescue (2), Wildlife Conservancy of Tropical Queensland (1), Ecofund Qld (1), Earthcheck/Green Globe (1), Origin Green Gas Program (1), Bush Heritage Australia (1), Local Council (1), Local Nursery (1), Offset with our own trees (1), Own (1), We plan to be a carbon offset provider (1), Daintree Rainforest (1), Virgin Blue (1), The Green Corridor-Cairns (1), Another approved Foundation (1)

The enterprises offsetting their carbon emissions were larger transport and tour operators, convention centres, some accommodation and a few attractions. The main types of tourism business emissions that were being offset by enterprises were office electricity (n=30), mainly by accommodation (n=16) and tour operators (n=9), fuel usage (tourist transport) (n=28), mainly by tour operators (n=18) and accommodation (n=8), and vehicle fuel (staff travel) (n=26), mainly by accommodation (n=13) and tour operators (n=10). One attraction stated this *needs to focus on how the balance of carbon use/offset is achieved i.e. in our environmental audit...number of times per week staff wash their uniforms were included in our calculations.* Some equated energy savings or decreased electricity use with offsetting. The tourism organisation planned to offset airline travel by staff by funding tree planting. The most popular type of carbon offset project preferred by tourism enterprises was their own carbon offset/bio-sequestration project (n=32). However, others preferred a partnership project with other organisations, a voluntary option for their clientele, or payments through an accredited carbon offset provider.

The four main types of carbon offset method that tourism businesses preferred to support were tree planting (n=41), energy efficiency (n=41), renewable energy (n=31), and waste diversion (n=22). Reasons given by respondents for offsetting by tree planting included: replacing trees cut down, replanting cleared land and providing habitat for wildlife, already being done on their own land, easy to action, cost effective, tangible and visible to customers, and *because our team can participate in the planting* (convention centre). A reef tour operator commented there were *limited certified options available in the region* for accredited offsets from tree planting. Reasons for offsetting through renewable energy were: already being done, greatest impact on reducing emissions, long term action, high profile of offset provider (Climate Friendly), plus tangible and measurable benefits. Comments about energy efficiency related to cost savings through mitigation actions rather than as an additional or extra offset activity.

The carbon offset provider or partner that tourism businesses invested in, planned to support, or had an opinion on, included a range of conservation agencies as listed in Table 4. Some of the 'other' responses mentioned offsetting on their own land, such as *Offset with our own trees,* or *We plan to be a carbon offset* provider; others were unsure about offsetting. Reasons for supporting carbon offset providers were: business needs/working relationship, conservation ethic, environmental impact, reputation/profile/well known, cost, simplicity, and

staff/visitor/community involvement. Tour Operators that paid for carbon offsets for vehicles did so through Greenfleet (n=4) and Climate Friendly (n=2), or offset staff travel on Virgin Blue (n=1). Larger accommodation that paid for offsets did so through Greenfleet (n=1), Origin Greengas (n=1), and Climate Friendly (n=1). One convention centre paid for carbon offsets through Ecofund Queensland. The cost of offsetting was an issue for smaller tourism enterprises.

The main reasons for implementing a carbon offset program in tourism enterprises were:

To attract tourists concerned about the carbon emissions of travel (n=51)
To market my business as a climate friendly tourism enterprise (n=50)
Personal concern about the environmental impacts of climate change (n=50)
Because it is the 'right thing to do' for the environment (n=50)
To financially support tree planting or renewable energy projects (n=28)
To purchase carbon credits before a carbon price/tax is set by government (n=2)
Other (n=7)

When responses were ranked by operators from one to four, the first ranked reason was: *Personal concern about the environmental impacts of climate change* (n=32); the second ranked reason was *Because it is the 'right thing to do' for the environment* (n=22); the third ranked reasons were *To attract tourists concerned about the carbon emissions of travel* (n=22) and *To market my business as a climate friendly tourism enterprise* (n=18); while the fourth ranked reason was *To financially support tree planting or renewable energy projects* (n=17). The other reasons stated by tourism enterprises, ranked first, were: *To align with current market expectations* (convention centre); cost, and operating sustainable ecotourism in a World Heritage Area (tour operators). Other reasons, ranked fourth, were: *My 13 year old daughter is my social conscience & drives me to do the right thing by the environment* (convention centre); *cost savings* (tour operator); and *To educate interested guests* (accommodation).

The tourism enterprises derived environmental, social, business and marketing benefits from carbon offsetting. Accommodation providers referred to environmental benefits for the local area and guests, attracting green visitors, marketing their eco-efficiencies, reducing costs and carbon footprints, and meeting social or community responsibility. A few saw no benefits

from carbon offsetting or did not know enough to comment, while one stated *Have to view such an investment as a threat mitigation strategy to offset increased costs and charges, reduced tourist numbers, increased damaging weather events etc.* Tour Operators also stated similar benefits from offsetting such as reducing costs and carbon footprints, social responsibility, environmental and green marketing benefits, plus meeting eco-certification requirements. One tour operator stated: *we would like to be seen as a leader in this field.* Attractions also mentioned benefits from offsetting such as looking after the environment and minimising climate change impact, educating staff and guests, green marketing, social responsibility, and industry leadership. One rainforest attraction included carbon offsetting as an integral part of their business plan with staff committed to reducing carbon emissions. They also emphasised the unwillingness of most visitors to pay more for environmental actions: *despite the rhetoric, one should not venture into carbon offsetting expecting to save money. If you are really serious about it the focus will be on 'giving' rather than 'receiving.'* Convention centres stated carbon offsetting met industry expectations and client demand, or supported renewable energy, plus *social (staff support) and marketing benefits (included in the bids we do).* The tourism organisation stated *we want to lead our industry by example.*

Conclusions

This paper reviewed the uptake of carbon mitigation actions by environmentally certified Queensland tourism operators. A carbon survey found 88% of enterprises agreed that climate change was an important issue for tourism, while 88% of enterprises strongly agreed or agreed that it was important to reduce their carbon footprint. Some 34 tourism businesses had audited their carbon emissions while another 28 operators planned to do an emissions audit. These tourism enterprises were implementing eco-efficiency measures related to energy savings/efficiency, recycling waste, conserving water, gas heating, solar power (or hydro), and using fuel efficient vehicles or vessels. Other behavioural actions were training staff, informing visitors, choosing green suppliers or marketing eco-actions. Only a few larger enterprises purchased Green Power due to cost. The main reasons for adopting carbon mitigation actions were marketing climate friendly tourism and cost savings along with environmental ethics, attracting green tourists and eco-certification. Some 24 enterprises were carbon offsetting, 31 enterprises planned to begin offsetting, and 28 enterprises did not consider offsetting was necessary. The preferred offsets were from tree planting with local conservation groups, or renewable energy. Key offset issues were their cost and credibility.

This survey found a stronger response to carbon mitigation actions by environmentally certified enterprises compared to responses in TQ's *Tourism Operator Environmental Indicators Benchmark* survey of 986 general tourism businesses in 2010. Further research could expand this carbon survey to non eco-certified tourism operators and to other regions. It could also assess whether the uptake of carbon mitigation actions by tourism operators increases after a carbon tax commences in Australia from 1 July 2012. Other research needs to assess the opportunities for tourism enterprises/destinations from carbon reduction actions.

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