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Queensland Climate Adaptation Strategy

Building a resilient tourism industry: Queensland tourism climate change response plan



This Sector Adaptation Plan was developed by the Queensland Tourism Industry Council (QTIC) and Griffith Institute for Tourism (GIFT) with the support of the Queensland Government. Sector Adaptation Plans are important components of the *Queensland Climate Adaptation Strategy*, outlining industry-led responses to the challenges presented by climate change.

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Executive summary

For Queensland's tourism businesses and communities, climate change is both a risk and an opportunity too big to ignore. Increasing costs of extreme weather events, changes to natural resources, and the transition towards a decarbonised global economy are all highly relevant to tourism.

A strategic plan, underpinned by ambitious actions, will support Queensland's tourism industry to respond to climate risks and opportunities.

Against the background of the wider Queensland policy framework on climate change, the *Building a resilient tourism industry: Queensland Tourism Climate Change Response Plan* (Tourism Sector Adaptation Plan) provides a roadmap for the tourism industry to respond proactively to climate change, and to lead the way as a steward for the environment and a key contributor to community wellbeing.

Vision for Queensland tourism

This plan, guided by input from the tourism industry, sets a vision for future-proofing the tourism industry through six key building blocks and priority areas. These are:

- resilient businesses, destinations and communities
- stewardship and education for healthy natural assets
- green tourism industry leading the way towards carbon neutrality
- diversified product for quality visitor experience
- sustainable branding and marketing
- the tourism industry is united in working together with government and communities.

The plan takes a partnership approach that recognises climate change is everyone's business and responsibility, and requires collaboration between all stakeholders and sub-sectors to ensure resilience is embedded in Queensland's diverse economies, landscapes and communities.

Situation analysis – risks and opportunities

A recent report by the Climate Council concluded that Australia's tourism industry is the most vulnerable and the least prepared to manage climate risks. Against a background of record growth in global tourism, and already-observed and future climatic changes, it is clear the later the sector responds, the costlier it becomes and the more challenging it is to capitalise on economic, environmental and social benefits associated with new ways of doing business.

Not all tourism sub-sectors and destinations will be equally impacted or affected by climate change. Stakeholder consultation undertaken for the development of this plan indicates that the highest priority risks (in terms of impact and likelihood) stem from extreme events and the impacts they have on both natural assets (e.g. beaches, coral reefs, trees) and built infrastructure. Heatwaves and sea-level rise (with the associated risk of inundation) were also seen as major risks. Biodiversity loss and ocean acidification (also affecting biodiversity) were of major concern to tourism stakeholders, especially those operating in the Great Barrier Reef region.

Stakeholders also considered opportunities that might come from proactive climate change responses. Developing low-carbon transport alternatives, greening the industry and providing incentives to those businesses who respond to climate change effectively are major opportunities. Preparing for changes in markets, developing new and diversified visitor experiences and supporting new products were also seen as beneficial, and align well with existing industry strategies and initiatives.

Practices and policies

The Queensland tourism industry is broadly aware of the need to adapt to climate change and is already implementing a range of activities that constitute a climate change response, even though they may not be explicitly undertaken for this reason. Existing examples of good practice highlight that, in many cases, effective responses are those that address climatic hazards and low-carbon opportunities at the same time. There are already a range of tools, templates and environmental certification schemes that tourism businesses can use to inform decision-making and monitor progress (e.g. carbon footprinting).

Following a period of intensive activity and leadership in climate change and tourism from 2007 to 2012, recent years have seen little recognition in Queensland or Australia of the need to adapt for climate change or mitigate tourism's contribution to greenhouse gas emissions.

There is now a clear opportunity and need for tourism policies and strategies to more explicitly consider and respond to climate risks.

This plan acknowledges that wider policy changes in the Queensland Government are supporting tourism resilience and decarbonisation. To benefit from these policies, the tourism sector needs to connect proactively to other industries and relevant government departments. Examples of relevant policies include the renewable energy target, development of a demand management and energy efficiency strategy and zero net emissions transport roadmap, Queensland Climate Resilient Councils program, Land Restoration Fund and *State Planning Policy*.

Gaps and barriers

Stakeholder consultation identified several gaps and barriers to developing tourism sector climate responses. These relate broadly to a lack of specific knowledge (e.g. changes in ecosystems or weather patterns), limited resources and capacity in the sector, and the need for additional tools and assistance. Some stakeholders specifically mentioned the need to better communicate knowledge or develop and share a joint industry position on particular climate risks and opportunities. Conflicting information on topics, such as the state of the Great Barrier Reef, was a major barrier to business undertaking adaptation action, as well as customer communication and marketing. Better communicating tourism's role as a critical economic sector and 'community builder' was seen as important, particularly in relation to securing government support for small businesses.

Another barrier to developing climate responses relates to the short-term nature of tourism planning and business decision-making. More support on how to address these issues was requested by some tourism businesses, alongside 'hands-on' assistance for making businesses more sustainable. Stakeholders considered that tools with the functionality to be used by everyone, such as a Queensland-wide carbon calculator, would be beneficial because they provide a transparent approach, generate benchmarks and assist long-term monitoring.

Insufficient resources and limited investment options to consider, develop and implement climate change responses are major barriers. Existing schemes and funds may not support climate resilience or decarbonisation efforts, and green bonds or specific climate bonds are only suited for large-scale projects over a longer timeframe. Thus, existing finance options are often not suitable for smaller tourism businesses. Beyond the direct financial capacity (e.g. to invest in new equipment or sustainability staff), the marginal costs of operating small to medium sized businesses, especially in regional areas, can make it prohibitive to implement adaptation and mitigation measures. Obtaining expertise in remote areas is a critical barrier for some.

Actions

The plan will be delivered under the leadership of the Queensland Tourism Industry Council, with high levels of cooperation and shared responsibility with other agencies. Actions cover the six priority building blocks.

The proposed actions recognise crosscutting issues such as community wellbeing, finance and insurance, research and development, and natural resources, and seek to achieve synergies through coordination and alignment across all levels of government and with other Sector Adaptation Plans. Additional resources and funding will be necessary to deliver some actions, but some can be delivered through partnerships and realignment of existing activities or resources.

Implementation will be governed by a permanent steering committee that will review progress of the plan and its specific actions. A detailed evaluation and monitoring framework will be developed and aligned with Queensland-wide targets, for example, those for decarbonisation.

Scope and objectives

The *Queensland Climate Change Response* was released in July 2017. This policy response includes two complementary strategies — the *Queensland Climate Transition Strategy* (QCTS) and the *Queensland Climate Adaptation Strategy* (Q-CAS).

The QCTS sets a vision of a zero net emissions future for Queensland that supports jobs, industries, communities and the environment. It includes three key climate change commitments:

- powering Queensland with 50% renewable energy by 2030
- reducing emissions by at least 30% below 2005 levels by 2030
- achieving zero net emissions by 2050.

The Q-CAS provides Queensland with a strong framework for empowering climate risk management and adaptation action across government, economic, social and environmental spheres. The Q-CAS is built around four pathways of action — Sectors and Systems, Local Governments and Regions, State Government, and People and Knowledge — that will build on the Queensland Government's existing investments and programs with new tools and engagement activities across Queensland's communities.

Sector Adaptation Plans (SAPs) are important components of the Q-CAS Sectors and Systems Pathway, and each SAP should be considered within the framework provided by the Q-CAS. SAPs will be developed for eight sectors — human health and wellbeing, biodiversity and ecosystems, tourism, small and medium business, industry and resources, agriculture, built environment and infrastructure, and emergency services. The Q-CAS also recognises that there are critical issues that cut across multiple sectors, and has described a mechanism to ensure that these issues are considered in a consistent way across the SAPs.

This *Building a resilient tourism industry: Queensland Tourism Climate Change Response Plan* (Tourism Sector Adaptation Plan — Tourism SAP) is an industry-led climate adaptation and mitigation roadmap for the tourism industry sector in alignment with the QCTS and Q-CAS. Both strategies are centred around a partnership approach that recognises that climate change is everyone's responsibility, and that a collaborative approach is needed to ensure resilience is embedded in Queensland's diverse economies, landscapes and communities.

The development of this sector plan was led by the Queensland Tourism Industry Council (QTIC) in partnership with the Griffith Institute for Tourism (GIFT). The process provided an opportunity for the tourism industry to collaborate and take stock of current activities and resources in Queensland's tourism sector, identify the main climate risks and possible impacts, and describe a clear vision to ensure the future of the industry in a changing climate and low-carbon economic landscape.

In the development of the plan, a consultative committee was formed to represent the industry, drive the direction, determine the scope for inclusion and consultation, and lead the advocacy toward the mainstreaming of climate change planning and resilience building across the industry. Within this sector plan, key stakeholders involved in the consultative committee included representatives from:

- state tourism organisation (Tourism and Events Queensland)
- regional tourism organisations (13 RTOs across the state)
- accommodation sector (Queensland Hotel Association)
- tour operators
- members of QTIC's Associations Council
- Great Barrier Reef Marine Park Authority
- Australian marine park tour operators.

The consultative committee was engaged throughout the project, and three stakeholder workshops were held in Cairns, Airlie Beach and Brisbane to refine the plan and ensure industry relevance. A questionnaire was sent to QTIC members in March 2018 to gather further input.

The plan aims to bring climate risks and opportunities to the forefront of industry discussion, raising the profile of mitigation and adaptation strategies. It addresses both adaptation and mitigation¹ needs for the Queensland tourism industry, and as such contributes to Australia's international commitment to the Paris Climate Agreement. The objective of the agreement is to limit global temperature rise to well below 2°C above pre-industrial levels.

The plan also recognises that efforts to address climate change sit within the broader agenda of the United Nations Sustainable Development Goals. Australia is committed to the Sustainable Development Goals, and this sector plan provides an opportunity to contribute to their implementation.

The objective of the Tourism SAP is to provide a framework for the tourism sector to proactively respond to climate change risks and opportunities, and lead the way as a steward for the environment and key contributor to community wellbeing.

Recognising the urgency of addressing climate change, the plan considers both a short- and medium-term timeframe (2030), with a long-term view towards Queensland's 2050 target of zero net emissions. The plan supports the immediate implementation of actions that reduce climate change risks to the sector and lays critical foundations for decarbonising tourism. The industry recognises that now is the time to prepare mid- and long-term strategies towards climate-resilience and near-zero emissions.

¹ Adaptation refers to the actions that minimise or prevent the negative impacts from climate change. It is distinct from, but complementary to, disaster resilience. Mitigation focuses on reducing greenhouse gas emissions to limit the extent to which our climate changes into the future.

Introduction

Changing business parameters

The global climate is changing faster than originally projected. Every year we are witnessing new records in climate extremes. In 2017, for example, Australia experienced extreme heat conditions, prompting the Climate Council to release a report entitled *Angry Summer 2016/17: Climate Change Supercharging Extreme Weather*. The 2017 summer broke 200 records, with Sydney experiencing its hottest summer ever.

Again, in January 2018, Sydney recorded extreme temperatures of 47.3°C.² In the 'angry summer', heatwaves were coupled with bushfires in central and eastern Australia, and heavy flooding was observed in the west. The two last summers both saw extremely warm sea surface temperatures leading to consecutive coral bleaching events of the Great Barrier Reef.

What does this mean for tourism? Very clearly, operating in often vulnerable regional locations comes with increasing costs and risks. Ignoring climatic changes and its impacts is not a viable long-term option, and the tourism industry and Queensland Government are now accelerating their involvement in climate change action to facilitate rapid adaptation to changing hazards and risks. Unlike other service industries, tourism depends heavily on the natural environment, and, in many cases, has also proven to be a keen advocate and steward of environmental protection (e.g. in the case of the Great Barrier Reef³). This stewardship and tourism's climate action is therefore beneficial beyond the sector itself.

A Climate Council report released in February 2018 highlights the urgency for tourism to adapt to climate change, and for the federal government to address accelerating risks more proactively.

The tourism industry is both the most vulnerable and the least prepared to manage climate risks.⁴

At the same time, global greenhouse gas (GHG) emissions, especially carbon dioxide (CO₂), are continuing to grow, despite global commitment to mitigate climate change and reduce emissions to net zero by 2050. This commitment is articulated in the Paris Agreement and was ratified by the Australian Government in November 2016. The Australian Government has set a target of reducing CO₂ emissions by 26–28% below 2005 levels by 2030. At present, Australia is falling behind the rest of the world as its GHG emissions continue to rise, making it increasingly difficult to meet this target. Tourism is a major contributor to carbon emissions, and — due to its continuous growth path — will become increasingly prominent in Australia's efforts to respond to climate change. Recognising the 'critical decade'⁵ (implying a very short time window to act), the Queensland Government signed up to *The Subnational Global Climate Leadership Memorandum of Understanding* (Under 2 MOU). The MOU stipulates that signatories will contribute to limiting warming to below 2°C, reducing GHG emissions to 80–95% below 1990 levels (or to less than 2 annual metric tonnes of CO₂ per capita) by 2050.

A risks and opportunities framework

Australia's and Queensland's commitments require a steep decarbonisation path, and the Queensland tourism industry will have to manage both risks and opportunities that stem from this relatively rapid transition. New investment, for example, will need to be directed towards low-carbon technologies and building designs, and increasing use of renewable energy, while tourism planning and management will have to consider the costs of carbon. Clearly, climate change presents some opportunities⁶ for tourism.

2 SBS News, 2018; Steffen, Stock, Alexander & Rice, 2017.

3 Liburd & Becken, 2017.

4 Climate Council, 2018.

5 Steffen, Alexander & Rice, 2017.

6 Becken, 2013; Ehmer & Heymann, 2008; Gössling, 2010; Hein, Metzger & Moreno, 2009; Peeters & Dubois, 2010; Ruttty & Scott, 2010; Scott & Becken, 2010.

*We need to understand that this 'new normal' goes beyond recycling.
(Tourism stakeholder, Cairns)*

Earlier work on identifying 'winners' and 'losers' of climate change has made way to a more sophisticated consideration of impacts and interdependencies of tourism with other sectors, although some discussions concerning 'last chance tourism' persist.⁷ Every destination and type of business will have to consider how climate change impacts on their particular operation. This process also involves exploring new opportunities that might emerge, for example, in relation to relative competitiveness. In this context, the importance of resilience is increasingly emphasised. Resilience to climate change not only refers to being able to cope with climatic impacts, but also to be actively engaged in the low-carbon transition through adaptation, mitigation and innovation.

Considering climate change as a risk management problem allows mainstreaming of climate-related issues into business activity, just like any other risk.⁸ Building on the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD)⁹ and the work on risks and opportunities for multiple industry sectors underway by Ernst & Young Australia for the Department of Environment and Science (DES), a risk and opportunity framework was developed for tourism.

*Climate change presents global markets with risks and opportunities that cannot be ignored, which is why a framework around climate-related disclosures is so important.
(Michael R Bloomberg, Chair of the TCFD)*

The physical impacts from climate change are the most direct risks. Impacts can be acute, such as a cyclone or flood, or they can be chronic, such as sea-level rise. Insurance or other forms of risk transfer are key. In addition, however, climate change brings other risks, for example, changes in destination image or markets. Risks may also come from changes in policies (e.g. mandatory carbon offsetting for international aviation), legal responsibilities (e.g. related to health and safety of tourists) or technology (e.g. new standards for energy efficiency or vehicle emissions).

Likewise, opportunities from climate change could arise from reduced operational costs and higher energy self-sufficiency, business innovations around new experiences and markets, and enhanced business resilience. Opportunities for tourism also lie in an improved image of being a responsible and 'green' destination. This is particularly important, as other destinations globally are accelerating action on sustainable tourism (e.g. Indonesia, Mexico, Portugal and Croatia).

Managing risks and opportunities strategically will increase both the stability and sustainability of the businesses and the destinations in which they operate (Figure 1).

⁷ Piggott-McKellar & McNamara, 2016.

⁸ Becken & Hay, 2007.

⁹ The TCFD was established by the Financial Stability Board (FSB) in December 2015 to develop a set of voluntary, consistent disclosure recommendations for use by companies in providing information to investors, lenders and insurance underwriters about their climate-related financial risks.

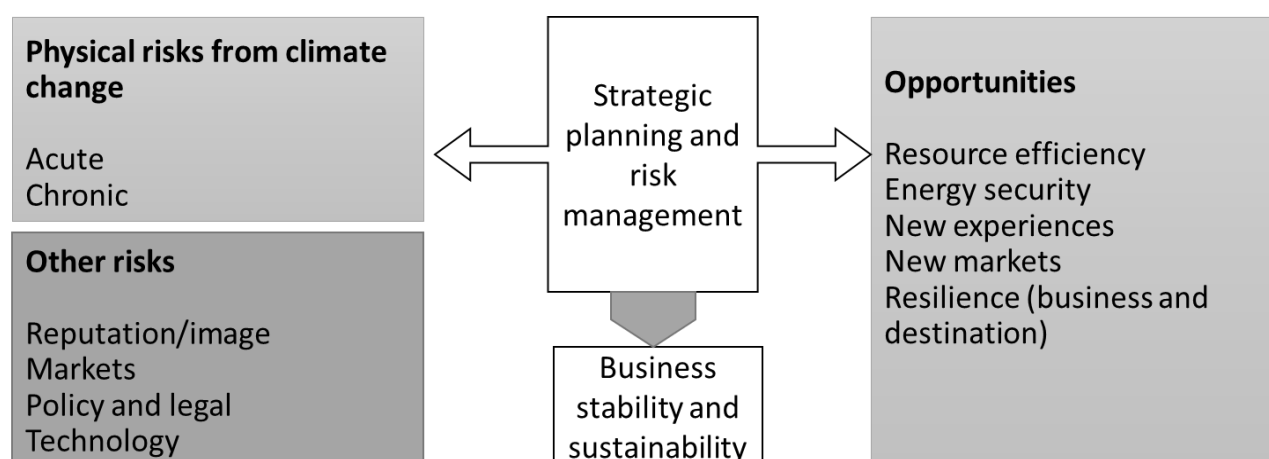


Figure 1. Risk and opportunity framework to develop climate change responses for tourism.

A vision for Queensland tourism

This plan provides a roadmap that will help bring climate change back onto the agenda of tourism businesses and stakeholders, and give credibility and urgency to the need to both adapt and mitigate. Existing initiatives will be identified and reviewed, and gaps identified. The plan will help prioritise action and mainstream climate change initiatives into planning and decision-making.

Tourism stakeholders expressed keen support for this plan and the tourism vision for 2030 was clear — for the tourism sector in Queensland to be future-proofed (Figure 2). There are six distinct building blocks that contribute to this vision. The Queensland tourism industry aspires to become a global leader in sustainable tourism (or 'green' tourism, as referred to by many stakeholders), in particular by showcasing best practice in nature-based tourism, nature conservation and stewardship. Stewardship also contains an element of education, both for staff and visitors. To be known as a 'green industry', stakeholders strongly supported the need for environmental targets that are in line with or exceed state government targets, aiming for carbon neutrality in the medium to long-term. Action should be supported by 'green' or 'sustainable' marketing and development of a strong brand based on sustainability.

*The government should be taking a position of global leader on this topic and inspiring other whole nations to aspire to Qld's position.
(Tourism stakeholder from Cairns)*

Considering climate hazards and risks, stakeholders felt that increasing the resilience of businesses, destinations and communities is critical. This can partly be achieved by developing a diversified portfolio of activities and attractions. The plan provides an important opportunity to speak with 'one voice' and work together effectively with government and the communities on which tourism depends.



Figure 2. Building blocks for the 2030 vision for tourism in Queensland, as seen by tourism stakeholders.

The building blocks and vision were tested with the consultative committee and QTIC members through a survey. A small number of members (N=19, March 2018) replied and rated all of the items (Figure 3) as very or extremely important. The findings confirmed the vision developed as part of the consultation process.

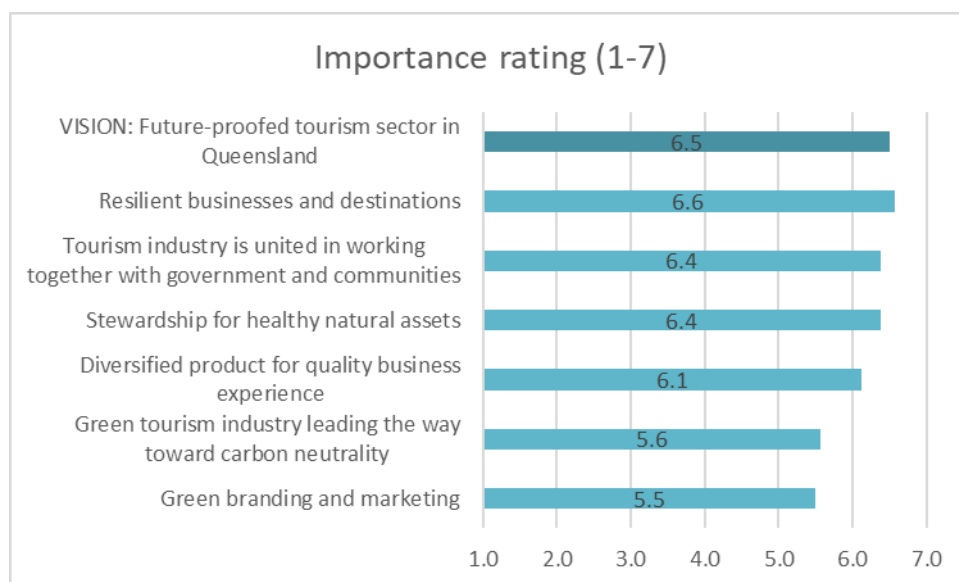


Figure 3. Importance of the building blocks and the vision (7 = extremely important).

The final section of this plan (Delivering on the Vision) uses the vision and building blocks to structure a wide range of actions and initiatives. Recommended responsibilities and timeframes are provided. Importantly, input from key stakeholders and organisations involved in the implementation of the plan has been sought to ensure the actions are realistic.

CASE STUDY

EMPORIUM HOTEL SOUTH BANK

EMPORIUM DEMONSTRATES

- Best practice building design
- Energy efficiency
- Water efficiency
- Waste minimisation



Emporium Hotel South Bank is the first hotel in Australia to be certified through the EarthCheck Design Standard. It is anticipated that the hotel's energy performance will be 61.5% above industry best.

Emporium Hotel South Bank is a purpose-built development that features apartments and residences alongside a 143-room boutique hotel. The hotel is developed to meet sustainability requirements and deliver high quality and efficient physical, community, economic and aesthetic benefits.

Sustainability practices include:

- building massing and orientation to deliver reduced operational costs
- maximisation of natural light and ventilation -- window to floor ratio of 30% to ensure that light and breezes reach the back of the building without overheating the rooms
- insulation and glazing performance optimisation for the best thermal comfort
- use of concrete on facade to ensure heat is captured before entering air-conditioned space
- rainwater used for irrigation and toilet flushing
- minimum 3-star WELS rated tapware for showers and 6-star WELS for other tapware
- the predicted water consumption of 194 L per guest night represents 7% better than EarthCheck Best Practice benchmarks for potable water consumption within the same climate zone and accommodation sector
- the projected quantity of waste sent to landfill represents 3% above EarthCheck Best Practice Benchmarks within the same climate zone and accommodation sector.



The Queensland tourism industry

The tourism industry is inclusive of sectors such as food services, accommodation, travel agencies, tour operators, and air, water and other transport, and can also cross over into education and training, international education, retail trade and other transportation services.

It is also important to note that the Queensland tourism industry depends heavily on key natural assets, including five World Heritage Areas that represent major drawcards for visitors — the Great Barrier Reef, the world's largest coral reef, the Wet Tropics World Heritage Area, which is one of a small number of areas worldwide that meets all four natural criteria for World Heritage listing, the Gondwana Rainforests of Australia, Fraser Island (the world's largest sand island), and Riversleigh Australian Fossil Mammal Site in north-west Queensland.

Tourism statistics

The tourism industry in Queensland contributed \$25 billion to Queensland's gross state product (GSP), representing 7.9% of total GSP (year ending June 2016). Tourism generated \$7.1 billion in exports over the same period, making it the state's third largest export industry, accounting for 14.8% of total Queensland exports. Tourism employs over 225,300 Queenslanders across almost 54,000 businesses, most of whom work in small or medium sized enterprise.¹⁰

In recent years, government and business communities have recognised the critical role of tourism and its contribution to economic growth in Queensland, including the number of new jobs it creates. Due to a slowdown in the resource industry, tourism has experienced resurgence and is flourishing against a relatively soft economic backdrop. In Deloitte's *Tourism and Hotel Market Outlook*, it is reported that international arrivals to Australia grew at twice the rate of global outbound travel, and international visitation 'continues to outshine broader economic performance'. Forecasts to 2020 indicate tourism will continue to grow faster than the wider economy.¹¹ Tourism is a sector with high inter-industry links, and therefore provides opportunities for other industries to benefit. An example is tourism's potential demand for biofuel and the positive impact this could have on Queensland's biofuel refinery activity (e.g. in Bundaberg).

Tourism is on a global growth path.¹² The World Travel and Tourism Council (WTTC) projects travel and tourism employment will grow 5.8% (compound annual growth) over the next decade in the Asia-Pacific region. In contrast, total economic growth is projected at 4.1% per annum, and other industries such as mining and agriculture are forecast to grow at 1.8% and 2.2% per annum respectively.

Tourism Research Australia provides important tourism statistics for Queensland.¹³ The five-year average growth rate for total visitor nights in Queensland is projected to be 4% from 2014–15 to 2019–20, or 3.9% over 10 years. This compares to 4.4% total five-year average annual growth for Australia, or 3.8% over 10 years.

10 Tourism Research Australia, 2016.

11 Deloitte's *Tourism and Hotel Market Outlook*, 2015.

12 The United Nations World Tourism Organisation reported that 2017 was a record growth year, with an average global growth rate of 7%, and over 1.3 billion international arrivals. See also World Travel and Tourism Council, 2017.

13 Tourism Research Australia (TRA): *State of the Industry Report 2016–17*, and International Visitor Survey and National Visitor Survey data, year ending September 2017.

CASE STUDY

BRISBANE AIRPORT



BRISBANE AIRPORT DEMONSTRATES

- Biofuel alternative for aviation
- Development of a new industry
- Carbon reporting



Brisbane is set to become one of a handful of hubs around the world for sustainable aviation fuel, under an agreement supported by the Queensland Government between Virgin Australia and US-based biofuel producer Gevo, Inc. The new agreement is critical to testing the fuel supply chain infrastructure in Australia to ensure that Virgin Australia and Brisbane Airport are ready for the commercial supply of these fuels.

Establishing Brisbane Airport as a biojet refuelling port will help open another key market for Queensland's cane farmers and biofuture pioneers. Biorefinery projects currently under development across Queensland have the potential to create 1100 jobs when they are operational.

Some of the existing refinery projects being developed will have the capability to produce biofuel for commercial aviation.

Brisbane Airport voluntarily reports annually under the federal government National Greenhouse and Energy Reporting Scheme (NGERS) which reports Scope 1 and Scope 2 emissions.

Tourism in Queensland is categorised into 13 regions — Tropical North Queensland, Townsville, Whitsundays, Mackay, Capricorn, Gladstone, Bundaberg, Fraser Coast, Sunshine Coast, Brisbane, Gold Coast, Southern Queensland Country and Outback Queensland. For the purposes of this plan, data has been aggregated to four regions — Northern Great Barrier Reef, Southern Great Barrier Reef, South-East Queensland and the Outback (see map in Figure 4).

For domestic travellers, Brisbane (6.7m), Gold Coast (4.2m) and the Sunshine Coast (3.4m) are the primary destinations, accounting for 60% of all domestic visitation to Queensland. The Southern Great Barrier Reef (Bundaberg, Capricorn, Gladstone) and Southern Queensland Country both saw approximately 2 million domestic visitors in the year ending September 2017.

For international visitors, Brisbane (1.2m), Gold Coast (1.0m) and Tropical North Queensland (0.8m) are the most visited destinations, accounting for 75% of international visitation in the year ending September 2017. The Sunshine Coast, Whitsundays and Fraser Coast are also popular destinations for international visitors due to their major natural attractors.

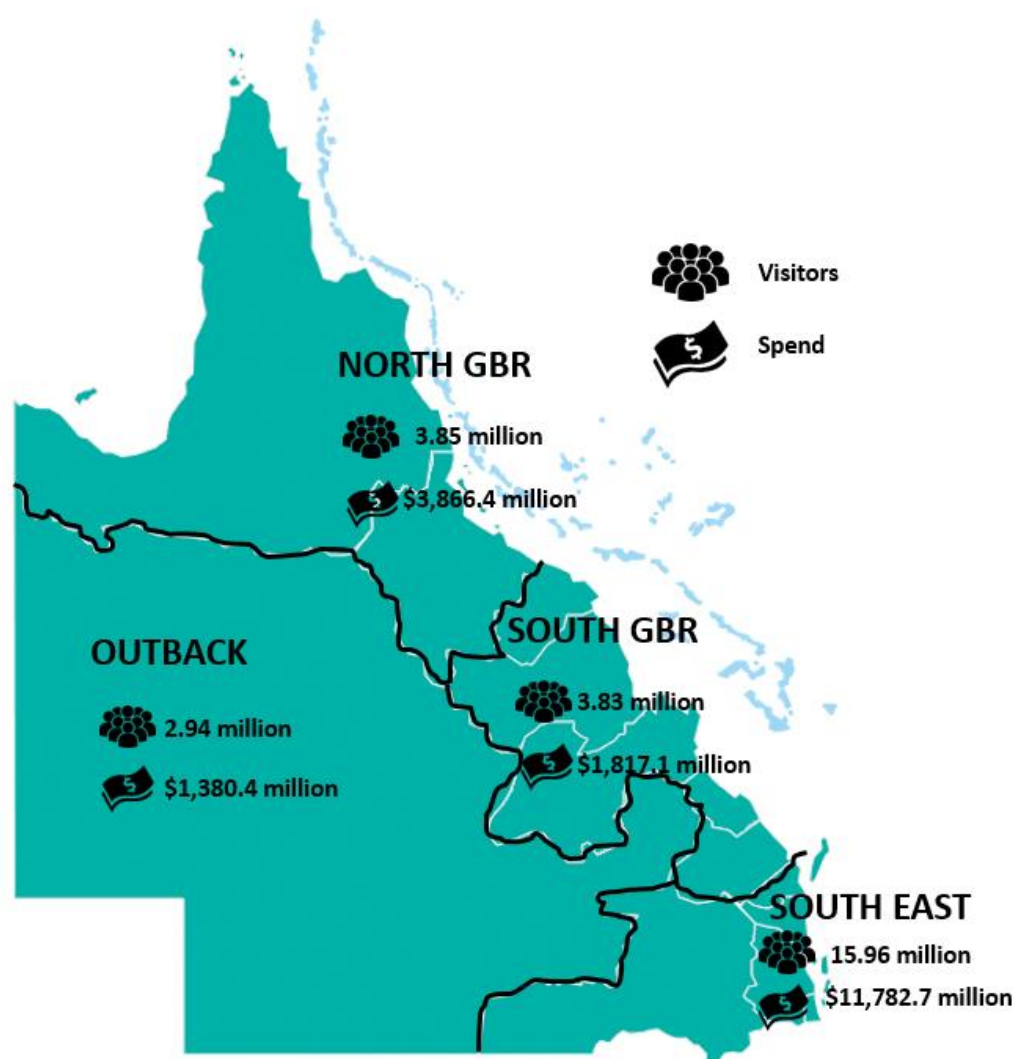


Figure 4. Queensland's tourism regions with data on visitor numbers and tourist expenditure.

Note 1: Outback includes Outback & Southern Queensland Country, North GBR includes Tropical North & Townsville, South GBR includes Whitsundays, Mackay, Rockhampton, Gladstone & Bundaberg, South East includes Fraser Coast, Sunshine Coast, Brisbane & Gold Coast.

Note 2: No spend data are published for Mackay. (Source: TRA tourism surveys).

Why tourism needs a Sector Adaptation Plan

A tourism-specific plan to respond to climate change is needed because any further delays will make the challenge bigger. Against the background of record growth in global tourism, and already-observed and future climatic changes, the later the transition eventuates the more difficult and costly it becomes. There are many benefits in developing new ways of doing business for tourism.

Economic reasons

Climate risks and impacts impose costs on businesses. These include, for example, ongoing operational costs (e.g. increased use of air conditioning), capital costs for new developments, repair or rebuilding after natural disasters and severe weather events, and increased insurance costs. Obtaining adequate insurance cover is increasingly a challenge for tourism operators in exposed areas.

Not addressing the need to invest in climate-resilient and low-carbon infrastructure and assets bears a substantial business risk. Investors and financial institutions are increasingly shying away from objects that are perceived as 'risky' or carbon heavy. In contrast, developments with stringent green standards and resilience ratings are likely to attract greater investment interest and possibly favourable loan conditions. Greener industry standards are also likely to attract more environmentally minded, often higher yielding, visitors.

The need to comply with legislation and to disclose performance in relation to carbon emissions is becoming increasingly mainstream. As is already happening in several countries (e.g. United Kingdom), requirements for monitoring and transparency will likely move from a current focus on large companies (e.g. airlines) to smaller businesses.¹⁴ It is becoming apparent that transition and legal risks may manifest within mainstream investment horizons, including the short term. Failure to mitigate, adapt or disclose the risk from climate change may create financial and liability consequences for company boards, investors and governments.

Queensland's competitiveness in terms of attractiveness (e.g. natural assets) and sustainable practices, including carbon neutrality, is an important collective reason for addressing climate change, especially with the loss of market share to strong nature-based destinations such as Tasmania.

Environmental reasons

Tourism depends on the environment, and the environment needs advocates to protect it. Environmental stewardship is an important role that tourism must continue to play (in particular biodiversity protection). Many tourism operators are passionate about conservation. One workshop participant in Cairns noted, 'Once species are gone you can't get them back.'

Through guest education and nature interpretation, tourism businesses can have a substantial multiplier effect by raising awareness about climate change and other environmental issues. This opportunity has been recognised in several Natural Resource Management plans.

Finally, as one of the state's key industries, tourism has a responsibility to reduce its own emissions and pressures on the environment (e.g. plastic or other waste). A sectoral plan helps to identify effective pathways to achieve lower footprints. Considering adaptation and mitigation as part of the same plan will help avoid mal-adaptation, that is, adaptation measures that aggravate the underlying problems.

Social reasons

The plan provides the opportunity for tourism to address multiple challenges that, if unresolved, have the risk to undermine tourism's ability to deliver social outcomes. One of the main opportunities associated with tourism is employment, especially in regional Queensland. Tourism is not only a job creator, but a thriving tourism industry can substantially enhance workforce wellbeing and, as a result, community resilience.

¹⁴ See Becken & Bobes (2016) for an assessment of the current state of carbon reporting in the global travel and tourism industry.

Tourism is deeply interwoven with communities, which often depend on tourism. The social vulnerability of these communities could be substantially reduced by tourism's ability to bring know-how, innovation, investment and infrastructure development. Tourism offers communities social pride and a way of life. It is important to understand that tourism also has the potential to exacerbate a community's vulnerability, especially when benefits from tourism are not equally distributed, decision-making does not consider all 'voices', and negative economic spin-off effects manifest (e.g. a rise in living costs). For any destination and community climate change response, it is critical to consider the interplay between tourism and community vulnerability to ensure (net) positive outcomes.

The benefits of providing a learning opportunity for visitors must not be underestimated. Similarly, tourism can be a change agent as a result of its influence on supply chains and communities. Tourism operators act as multipliers to educate people about the environment and how to contribute positively, and they play an important role in protecting resources for future generations.

CASE STUDY

FUN OVER FIFTY



Fun Over Fifty is a Brisbane-based, accredited tour company specialising in the over 50s market. As a multi-award-winning operation, it provides all-inclusive coach, rail, air and cruise holidays throughout Australia. Owner Toni Brennan is passionate about ensuring Fun Over Fifty is both a financially viable and sustainable business and is committed to protecting and enhancing the local communities and environments they visit. The company's vision is, 'to be recognised as the best quality and most sustainable tour operator in Australia', reflects this ethos.

Fun Over Fifty is one of only 12 businesses Australia-wide to achieve Ecotourism Australia's Climate Action Leader status. Fun Over Fifty has reached an advanced level of adaptation, emissions reduction and offsetting. The company measures and audits its carbon footprint and is constantly exploring new innovations to further its journey towards carbon neutrality.

FUN OVER FIFTY DEMONSTRATES

- Climate leadership
- Carbon footprinting and neutrality
- Guest education



Example of eco-touring programs:

- to reduce the carbon footprint of 75,000 meals purchased in 2017, they worked with catering suppliers to source seasonal, locally grown and supplied produce
- the company's Green Guest Policy allows guests to waive their daily room clean. In 2017, 1386 room cleans were forfeited, saving power, water and waste
- the 'Being Seen, Being Green' activities provide guests an opportunity to participate in environmental initiatives, e.g. planting of native trees and sand dune restoration on Fraser Island
- the Green & Gold Army, consisting of staff, suppliers, guests and volunteers, enjoys participating in the World Environment Day Corporate Tree Planting Challenge - over 6870 trees have been planted in two years
- Carbon Offset Programme partnering with Greenfleet Australia, all air travel (3077 flights in 2017) and all 'Gold Class' and 'Diamond Class' coach mileage is offset with tree planting. In 2017, 4010 trees were planted through this programme, saving 1124 tonnes of carbon emission.

Climate hazards and risks for tourism in Queensland

The Queensland tourism industry is exposed to multiple climate hazards and risks, and the impacts vary for different regions and industry sub-sectors (Figure 5).¹⁵ Understanding these hazards is critical for delivering this plan's vision, in particular the building block on resilient businesses, destinations and communities, but also provides opportunities around diversification, stewardship and governance.

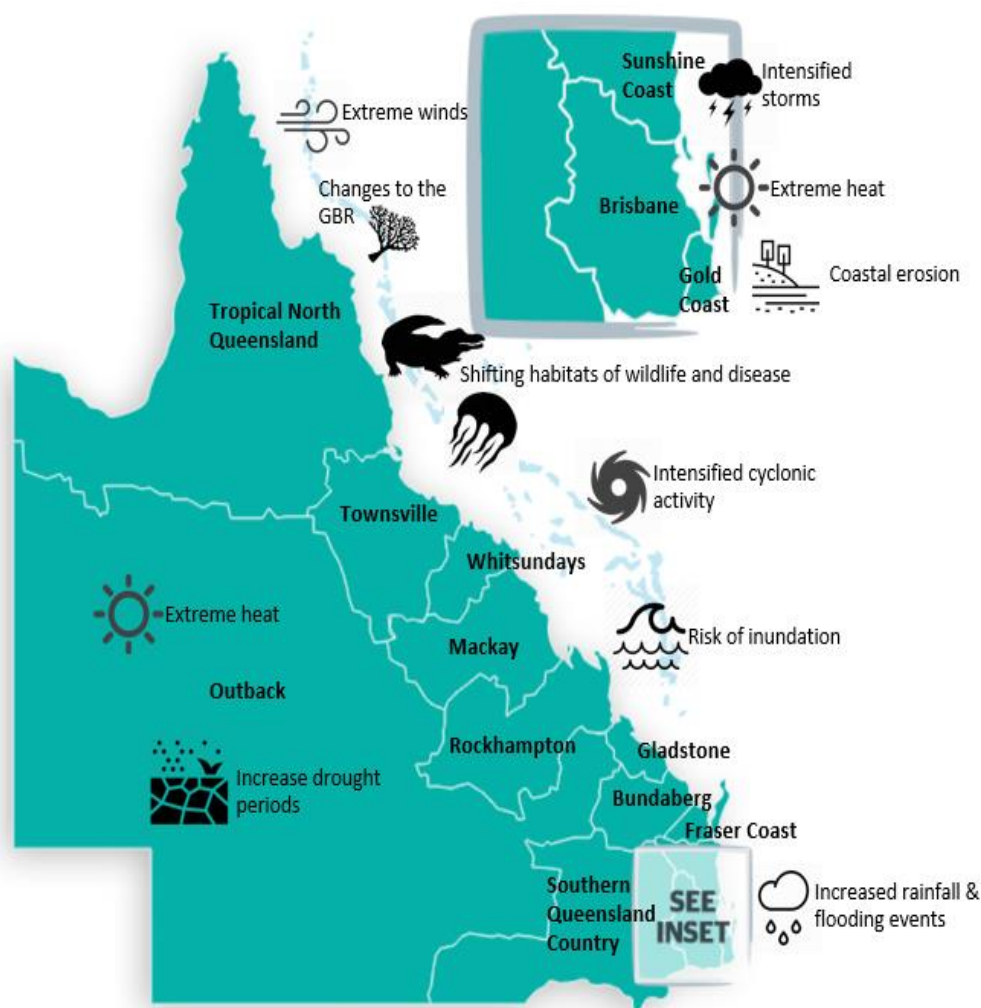


Figure 5. Visualisation of key climate risks and impacts.

¹⁵ Becken, 2016; Amelung & Nicholls, 2014; Turton, Hadwen, Wilson, Jorgensen & Simmons, 2009; see also Department of Environment and Science at <https://www.qld.gov.au/environment/climate/climate-change>.

Temperature

Expected changes

The 2016–17 summer was the second hottest on record for Queensland. Brisbane experienced 30 consecutive days above 30°C, and experienced the hottest summer on record for mean temperature.¹⁶

For Queensland in 2030, the annual average warming is projected to be between 0.5 and 1.5°C above the climate experienced between 1986 and 2005. Assuming a high-emissions scenario, the average temperature is projected to rise by 2.9°C by 2070 (with a range of 1.9 to 3.9°C). Warming is expected to be relatively greater in winter. The average increase in temperature is often less meaningful than the increase in extreme events. A commonly used measure is the number of days over 30 or 35°C. In Charters Towers, for example, there are currently 51 days over 35°C each year, and this is predicted to increase to 75 by 2030 under a mid-range emission scenario.¹⁷

What does this mean for tourism?

Higher temperatures have several implications for tourism. First, thermal comfort may become a major issue for tourism in some regions and during some periods of the year. Modelling that uses the so-called Tourism Climatic Index shows that climatic conditions will deteriorate for most regions in Queensland to reach a level of 'unfavourable' by 2050.¹⁸

The risk of heatwaves is predicted to increase substantially. By 2090, and under a high-emissions scenario, there could be 95 consecutive days of 30°C or more in Townsville. Even under a low emissions scenario, there could be 60 consecutive days of 30°C or higher.¹⁹ Heatwaves of such extent pose major health and wellbeing risks to both workers and visitors. It has been estimated that the 2013–14 heatwave cost about \$8 billion due to reduced productivity of workers and heat-related health issues.²⁰

Extreme temperatures affect business. A Melbourne study²¹ found that local businesses lost 10% of revenue in the January 2014 heatwave. The study further established that 59% of businesses in the city experienced additional operational costs (e.g. for air conditioning or cancellations) as a result of hot temperatures. Hospitality, retail and tourism industries were most affected. Greener building designs that can cope with heat (e.g. natural ventilation) will help to address some of these risks and reduce cooling costs.

Hotter temperatures, especially when combined with less precipitation, increase the fire risk. Climate models project harsher fire weather. This poses a major risk to tourists, tourism infrastructure and natural assets, and could also negatively affect perceptions of safety. For businesses, this could mean the need to be more diligent in removing fire hazards, for example, by clearing overgrown allotments, trimming branches, cleaning gutters, obtaining adequate insurance and having clear guest communication plans in place (e.g. for evacuation).

Increases in temperatures were also noted in stakeholder consultations as a risk factor to impacts on terrestrial biodiversity that may change or reduce destination attractiveness. Businesses may have to adjust their products (e.g. guiding experiences). While tourism operators alone cannot stop climate change and the resulting impacts, they play an important role, and can modify their operation in a way to minimise additional stress on the ecosystem. Herein lies an opportunity for tourism to demonstrate stewardship for nature conservation and develop new practices that have a minimal footprint on the environment.

¹⁶ Steffen et al., 2017.

¹⁷ Climate Change in Australia, see: <https://www.climatechangeinaustralia.gov.au/en/climate-projections/explore-data/threshold-calculator>.

¹⁸ Amelung & Nicholls, 2014; Hennessy, Webb, Kirono & Ricketts, 2008; Turton et al., 2009.

¹⁹ NCCARF, 2016.

²⁰ Steffen et al., 2017.

²¹ Melbourne City Council, 2014.

CASE STUDY

JUNGLE SURFING CANOPY TOURS



JUNGLE SURFING DEMONSTRATES

- Low impact tourism
- Renewable energy sources
- Revegetation and carbon offsetting



Jungle Surfing's mission is to be a benchmark for other tourism businesses operating in wilderness locations and inspire and assist other local businesses within the community, with the ultimate aim of becoming a carbon neutral tourism destination. Its goal is to protect and promote our pristine natural environment through the provision of unique, adventurous and educational activities with a minimal environmental footprint and sustainable operations.

All operations run on renewable power from solar panels and micro-hydro turbines, with power stored in banks of batteries and supplied to buildings through an inverter. During times of year with limited sunshine hours, the water flow through the turbines in the creek supplies additional power input. During dry season with minimal water flow, there is generally plenty of sunshine. There is a back-up generator on site in case of emergencies.

Staff operate a small propagation and planting program, having previously operated a full native nursery at Cape Tribulation Resort which is now closed. Native plants are utilised in revegetation projects on the Jungle Surfing property and the company provides plants to local residents for revegetation on their own land.

The Jungle Surfing structure is designed to have a negligible effect on the trees to which the platforms and ziplines are attached. There are no bolts, nails or constrictive cables used in construction.

All buildings were erected in previously cleared areas and there is minimal impact on the rainforest environment as we follow small unobtrusive walking tracks. In areas predisposed to erosion, boardwalks, permanent pathways and stabilised banks with revegetation are used.

All construction materials were carried into the forest by hand and wherever possible recycled materials were sourced for the construction of buildings, boardwalks and platforms.

All cleaning products are environmentally sound and biodegradable and a very functional recycling program is in place. All recycling and rubbish is taken to the Cow Bay transfer station and organic waste is composted.

Being eco-friendly or environmentally aware is becoming more and more important, especially for tourism products operating in natural areas. It is vital that organisations play a part to preserve our environment, as well as set an example for tourists visiting, with the hope to inspire people to make changes when they get back home. It is not only a great talking point on the tour, but staff also feel proud to work for a company that is leading the way in renewable energy. As a business self-sufficiency adds benefits, they are not reliant on the grid especially in the event of a cyclone or severe weather, and there are no nasty energy bills at the end of the month, so operational costs can be managed more efficiently.

Changes to the Great Barrier Reef

Expected changes

The most pervasive and persistent risk to coral reefs worldwide, including the Great Barrier Reef, is climate change. Increasing atmospheric temperatures lead to higher sea surface temperatures. Ocean warming largely follows the global warming trend, where the rate of warming of tropical ocean surface water is on average 70% of the global warming rate. Modelled projections for ocean warming in the coming decades depend on the carbon emissions scenario on a global scale. The increase in near-coastal sea surface temperatures is expected to be between 0.4 and 1.0°C by 2030, and 2 to 4°C by 2090, under a high-emission pathway compared with the 1986 to 2005 average.²²

Corals are sensitive to changes in ocean temperatures as they live close to their upper thermal limits. Coral bleaching occurs when the thermal thresholds are exceeded due to increases in sea water temperatures. Of particular concern are the projections that the reef could experience temperature-induced bleaching events twice per decade by about 2020, and annually by about 2050 under high-emissions scenarios. As bleaching becomes more frequent and more intense, recovery processes are unlikely to be sufficient for reefs to persist as coral-dominated systems. This will affect the many coral reef fish and invertebrates that rely on healthy coral for their survival, making them vulnerable to changes in coral reef habitats.

Increased CO₂ concentrations in the atmosphere have an additional chemical consequence of ocean acidification. As CO₂ dissolves in the ocean, the water becomes more acidic and the carbonate seawater chemistry changes. Globally, about 30% of man-made emitted CO₂ has been absorbed by the oceans, increasing the pH by 0.1 unit in the surface waters (representing a 26% increase in the concentration of hydrogen ions in seawater). The critical flow-on effect is a lowered capacity for corals to build the skeletons that underpin the three-dimensional structure of the reef. Ocean acidification affects biological and ecological functions of a range of other marine organisms.

More intense cyclones cause major localised physical damage to the reef. Increased intensity of rainfall events and resulting discharge from rivers lead to increased turbidity and high-nutrient inputs from land-based industries. Sedimentation and nutrients reduce water quality and further stress the marine ecosystem.

What does this mean for tourism?

Any declines in the health of the Great Barrier Reef are of existential concern to tourism operators and the communities in which they operate. The coral bleaching events of the last two years have severely affected the resource base of the tourism industry. The business viability of some reef-based operators is at risk.

Cyclone Debbie caused considerable damage in the Whitsunday Islands in 2017, both to man-made structures and natural assets (e.g. coral reefs), forcing operators to redevelop their products and diversify away from experiences that solely depend on intact underwater landscapes. Product diversification is not only an adaptation measure, but also an opportunity for investment into new products and potentially new destinations that so far have not benefited from tourism.

The Great Barrier Reef is not only a major drawcard for visitors to North Queensland and the Southern Great Barrier Reef region, it is also a major pull factor for tourists to Queensland, and indeed Australia. The reduced integrity and attractiveness of the reef therefore not only affects marine tour operators, but also has a flow-on effect that is much wider and affects the whole tourism industry up to the national level.

The quality of experiences is clearly affected if tourism fails to deliver effective stewardship of the Great Barrier Reef. While a large number of operators meet high standards, there is potential to further increase performance. In addition, and because of the iconic status of the reef as a World Heritage site, the tourism industry also suffers from negative publicity, and the notion of 'last chance tourism'. Addressing some of these challenges proactively, including extending interpretation and education programs for tourism, will be beneficial for tourism.

²² Australian Government, 2017; Climate Council, 2018.

CASE STUDY

TOURISM WORKING WITH THE GREAT BARRIER REEF MARINE PARK AUTHORITY



TOURISM WORKING WITH GBRMPA DEMONSTRATES

- Partnership and stewardship approach
- Contribution to research and monitoring



Marine tour operators, individually and through the Association of Marine Park Tour Operators, are working closely with GBRMPA on monitoring environmental change. In particular, operators contribute to the Eye on the Reef program, which is set up to enable both visitors and operators to contribute information about reef health, marine animals and incidents.

Reef tourism operators contribute to monitoring through the Rapid Monitoring Survey or the Tourism Operators Weekly Monitoring Survey. These surveys demand ongoing commitment to the monitoring of environmental indicators in the same location (i.e. where dive operators have a licence to operate). In addition, several operators display information on the visitor-focused part of the Eye on the Reef system, namely the 'Sightings'. Visitors to the reef can report what they have seen either on a website or through a mobile phone app. The data are used by GBRMPA as part of its comprehensive reef monitoring program.

Reef operators also play an important role in facilitating research on climate change by hosting scientists on their boats. Community (including school) trips sponsored by operators also contribute to awareness-raising.

Sea-level rise

Expected changes

The pace of global sea-level rise has accelerated by a factor of three since 1990, and over half the Australian coastline is now estimated to be vulnerable to erosion from rising sea levels. Over the last 20 years, sea levels in Australia have increased by between 2.6 mm and 3.1 mm per year.²³ In Queensland, under a high-emissions scenario, sea level is projected to rise by 80 cm above present day levels by 2100. Levels of increase differ by location, and also have different impacts depending on the coastal morphology and infrastructure.

What does this mean for tourism?

Sea-level rise will lead to the incremental loss of land, but it also increases the risk of inundation. More specifically, higher sea levels exacerbate the impacts of storm surges and spring tides, with an increased risk of flooding. Cairns city, for example, is low-lying and prone to flooding on a high tide during the wet season. Modelling shows that, at present, a one in 100 year storm event results in a 2.3 m higher sea level.²⁴ Adding sea-level rise to these projections could result in a rise to 3.0 m, increasing the risk of flooding of Cairns Airport, which sits at about 3 m above sea level.

Sea-level rise may become costly for many coastal tourist destinations in Queensland. The Gold Coast is likely to experience substantial inundation as a result of sea-level rise, storm surge and other flooding. An inundation map derived from CoastAdapt (see the tools listed in Table 1, page 28) shows significant inundation under the assumption of a high-emission and high sea-level rise scenario for 2050. Loss of businesses and a general 'feel' of the destinations (e.g. expansive beaches) could dramatically affect tourism and generate the need to develop new products and positioning (including brand). For some destinations, such a 'rejuvenation' presents an opportunity.

Beach erosion is another major issue faced by the Gold Coast. Already, the Gold Coast City Council transports between 400,000 and 700,000 m³ of sand per year. The cost of this beach nourishment is in the order of \$11–54 million per year for the rest of the century, but cost may increase depending on the sea-level rise scenario.²⁵ The Gold Coast is the most prominent example of the costs of managing beach erosion, but many other coastal destinations are facing similar issues.

Sea-level rise can also affect ecosystems and habitats, including those for turtles. Turtle nesting is a major drawcard for the Southern Great Barrier Reef, and negative impacts on the turtles would adversely affect tourism.

Rainfall and flooding, and drought

Expected changes

Across Queensland, high variability in precipitation will continue, but the intensity of heavy rainfall events is likely to increase (Queensland Government, 2017). In south-east and north Queensland, rainfall projections for 2070 show little change or a slight decrease, expected in winter and spring.

In the Northern Great Barrier Reef region, more frequent El Niño events are expected. This means a change in rainfall patterns with extended dry periods. Climate modelling indicates that the far north of Queensland will have a longer dry season.²⁶ This could have implications for the Wet Tropics ecosystem, which is considered vulnerable to climate change as it depends on adequate rainfall throughout the year.

The Queensland Government is expecting that the risk of drought could increase. Higher temperatures lead to increased evapotranspiration and transpiration from plants. Combined with changes in rainfall (more variability and decline in some areas, and longer spells of dry weather), an increase in drought occurrence is likely. This

²³ Australian Government, 2017; CSIRO & BOM, 2016; Dangendorf, Marcos, Wöppelmann, Conrad, Frederikse & Riva, 2017.

²⁴ McInnes, Walsh & Pittock, 2000.

²⁵ Cooper & Lemckert, 2012.

²⁶ Hennessy et al., 2008.

presents a particular risk for the inland regions.

What does this mean for tourism?

Changes in rainfall intensity, and in particular significant flooding events, can lead to substantial disruption of transportation services. This could be particularly problematic for some regional areas. 'Bad weather', including high winds, also inhibits certain outdoor activities and can affect the enjoyment of tourists through increased likelihood of seasickness and reduced visibility for sightseeing, snorkelling and diving. Sailboat operators could be impacted by reduced demand due to an increase in the number of days with rough seas. In extreme events, the safety of tourists can be at risk, and given that visitors are often unfamiliar with the new environment of their destination, this requires particular attention and precautionary measures.

Excessive rainfall can damage tourism assets and infrastructure, increasing the need for insurance — often resulting in additional costs. Drought can necessitate water restrictions, which impact on tourism providers and tourists (e.g. beach showers). The need to secure an additional supply of water increases operational costs. Some sub-sectors of tourism are comparatively water-intensive, for example, accommodation. The amount of water required depends on the facilities (e.g. pools, spa facilities, restaurants) and the types of customers.²⁷

This might be particularly pertinent for destinations and businesses in the Outback. For example, south-west Queensland is seeking to enhance tourism visitation. This is supported by several initiatives, including the launch of the Natural Sciences Loop in 2014, which was a collaborative effort between South West Regional Economic Development Association and the Queensland Government's tourism department. Considering sustainability and resource constraints in future developments is key (e.g. installation of rainwater tanks, low-flow showerheads), and the opportunity to invest in resource-saving technology and equipment now will likely generate benefits from reduced risk exposure and operational costs in the future.

Rainforests in the Cairns region are unlikely to disappear unless they are severely degraded by frequent bushfires or cleared for other land uses. However, evidence from earlier droughts and fires suggest the forests of the future might be different to the forests that tourists visit today. This may not necessarily matter for tourism as long as the forests remain attractive places to visit. Forest-based tourism activities provide an important diversification away from beach and reef tourism. The purposeful development of low-impact tourism has been explicitly recognised in several Natural Resource Management plans as a means for developing regional economies and protecting landscapes and biodiversity.

27 Becken et al., Garofano, McLennan, Moore, Rajan & Watt, 2014.

CASE STUDY

SOUTH BANK CORPORATION



SOUTH BANK CORPORATION DEMONSTRATES

- Combining business viability with environmental performance
- Rainwater harvesting
- Stormwater management



The Corporation's core values is to continue to be ecologically and financially sustainable. The precinct is a leader in sustainable development, which is managed on a financially sustainable basis to allow the Corporation to deliver community benefits over the long-term.

In 2011, the Corporation's installed a Rain Bank, an innovative stormwater harvesting and re-use centre. Rain Bank can recycle up to 77 megalitres of stormwater each year, enough to provide 85% of the Parkland's irrigation and non-potable water requirements. Rain Bank diverts stormwater runoff from a highly urbanised 30-hectare catchment. It also receives pre-treated waste backwash water from the South Bank swimming lagoons.

The Stormwater Harvesting and Interception Pit (SHIP) was constructed over an existing stormwater drain that is subject to tidal inundation. A weir within the SHIP allows stormwater to be intercepted and pumped to the main storage tank. The weir is also designed to keep salty river water out of the system as the stormwater system is affected by tidal inundation.

Tropical cyclone intensity

Expected changes

Projecting tropical cyclone activity under different climate change scenarios is difficult, but it appears that, while the frequency of tropical cyclones will decrease, there is a likely increase in the proportion of very intense tropical cyclones (e.g. Yasi).²⁸ Climate models also suggest more cyclones could reach further south along the coastlines.

What does this mean for tourism?

Cyclones can significantly impact on the tourism infrastructure in cyclone-prone areas during the cyclone season (November–April). Impacts stem from storm surge and erosion, flooding, wind damage and coral damage. The Insurance Council of Australia reports that Cyclone Debbie (April 2017) was the second most expensive cyclone in Australia's history, with an estimated loss of \$1.565 billion. One year on from Debbie, a number of operators are still in recovery, with several resorts and hotels not yet reopened. The cyclone had a significant impact on businesses, resulting in loss of staff and negatively affecting the perceptions of the destination. The long-term recovery from a cyclone can be used as an opportunity to 'rebuild better' and improve the resilience of infrastructure, as well as the preparedness of communities.

Most Queensland tourism operators have a good understanding of the local weather, the significance of extreme events, and how to prepare for them. However, there is always a risk of complacency, and ongoing efforts into promoting preparedness are important. The health and safety of visitors and staff depend, among other things, on the ability of destinations and operators to adapt planning and management practices to address the anticipated impacts of climate change and communicate effectively with visitors. Integration between tourism and emergency services is critical for an effective disaster response.

Changes in distribution of wildlife and diseases

Expected changes

Scientists predict that some of the current range of diseases could change in response to increasing temperatures, humidity and rainfall. Mosquito-borne diseases, such as dengue and malaria, can lead to serious and sometimes life-threatening illnesses. At present, dengue is confined to northern Queensland. Outbreaks occur almost every year. Under a warmer, and possibly wetter, climate, these diseases may increase in their prevalence. Future outbreaks may become more difficult to control and more geographically spread out, especially towards the south²⁹. This has substantial implications for public health.

A warmer climate and changing rainfall patterns will also increase the range and prevalence of food and water-borne diseases such as parasitic (zoonotic) diseases (e.g. leptospirosis). Increased exposure to pathogens (e.g. gastroenteritis, respiratory illnesses following exposure to moulds and fungi after floods) poses a risk, especially to vulnerable groups in communities.

Similarly, some dangerous animal species may expand their ranges as air and sea temperatures increase. Of particular concern is the possible southward movement of Irukandji jellyfish, although the existence of Irukandji in south-east Queensland waters depends on several factors (including not only temperature, but also acidity, habitat and ocean currents).³⁰

What does this mean for tourism?

Increases in the likelihood and spread of diseases are of concern to tourism as they affect the health and safety of visitors and workers. For visitors, changes in the health risks may require additional measures of protection (e.g. spray, mosquito nets or vaccination), potentially compromising comfort and increasing costs.

²⁸ Climate Council, 2017.

²⁹ Hughes & McMichael, 2011.

³⁰ This issue received recent media coverage, with Surf Life Savers Queensland confirming lifesavers had found another specimen of the jellyfish during a 'stinger drag' off Fraser Island in January 2018 (Klein & Pitt, 2013). This followed 2017 sightings of Irukandji jellyfish at the Sunshine Coast. What is known as the 'Irukandji jellyfish' is in fact one (*Carukia barnesi*) of 16 species of Irukandji; a type of 'box jellyfish'.

For some diseases, there is a risk to life. Queensland and Australia currently have a reputation as a 'safe' destination to visit. Changes to the spread and impact of these diseases is likely to cause reputational damage, and has the potential to negatively impact on the consumer decision-making process.

Members of south-east Queensland communities have particularly expressed concern about the risk posed by Irukandji jellyfish and the impact on tourism. The establishment of 'stinger seasons' at these destinations is a possibility.

Sub-sector specific risks and opportunities

The tourism industry is composed of many different sub-sectors, all of which have different exposure and vulnerability to climate change. An earlier project in the Sunshine Coast region, for example, identified high air temperatures and changes in rainfall as priority risks, and tourism businesses particularly highlighted the negative impacts on their operations (e.g. unfavourable weather) and customer satisfaction.³¹ There are also new opportunities for some sub-sectors, destinations and businesses that seek to differentiate themselves by how they address climate change.

This plan differentiates key tourism industries and services: accommodation, water-based activities and transport, cultural activities, other attractions and activities, food and beverages, land transport, air transport, and travel agencies and services.

Not all risks are equally relevant to the different tourism sectors, and their impact depends on the particular setting of a business. Hotels, resorts or campgrounds close to the shoreline, for example, will be more likely affected by storm surges and cyclones (acute physical risks) and sea-level rise and beach erosion (chronic risks), whereas those located in the inland regions are more exposed to drought, riverine flood and possibly fire risk. Climate change provides an impetus to future-proof structures and settings, and make tourism infrastructure more resilient.

The so-called sharing economy (e.g. AirBnB, LocalYokl, Uber) may present microbusiness opportunities in a decentralised economy and remote regions. There could be risks as well, for example, the lack of regulation in these informal economies could result in higher risk exposure. More research in this space would be needed to understand specific vulnerabilities.

Some tourism sub-sectors will likely be affected by changes in policy and technology. Transportation, for example, is undergoing rapid changes in technology (e.g. electric vehicles). Stricter regulation in terms of carbon efficiency and possibly carbon offsetting is likely.³² International aviation, while not explicitly considered in this plan, will have to address carbon emissions from 2021 as part of the Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA), which is in effect, putting a price on carbon on the majority of routes. This may have flow-on implications for the Queensland tourism industry.

In the consultation workshops, as well as in a stakeholder survey administered through QTIC, tourism stakeholders were asked to prioritise risks and assess their impact and likelihood. Figure 6 visualises the resulting risk matrix. The matrix shows the scores for impact and likelihood as agreed on by participants across three workshops. The scores were discussed and negotiated at 16 different working group tables and arithmetic means were calculated. There was very little difference between the tables of each of the three workshops. The findings shown in Figure 6 were also supported by the survey of QTIC members.

The damage from extreme events, both on natural assets (e.g. beaches, coral reefs, trees) and built infrastructure, emerged as a key priority. Both impacts were considered severe and likely. Heatwaves and sea-level rise (with the associated risk of inundation) were seen as major risks. Biodiversity loss and ocean acidification (also affecting biodiversity) were also of major concern to tourism stakeholders.

31 Lim-Camacho, L., Ashworth, P. & Thomas, C., 2012.

32 Carbon offsetting provides a market-based instrument to reduce emissions where it is most cost-effective. Thus, the purchase of a carbon credit (e.g. 1 tonne) allows the buyer to emit the equivalent and refer to this process as becoming 'carbon neutral'. However, it is important to note that the trade of emissions will not lead to an absolute reduction in emissions into the atmosphere. The word neutral is to be interpreted as maintaining the status quo of existing levels of emissions. Ultimately, the world will run out of carbon credits and every party will have to achieve absolute emissions reductions. Thus, carbon offsetting is a short-term mechanism but no long-term solution. For more detail, refer to Becken & Mackey, 2017.

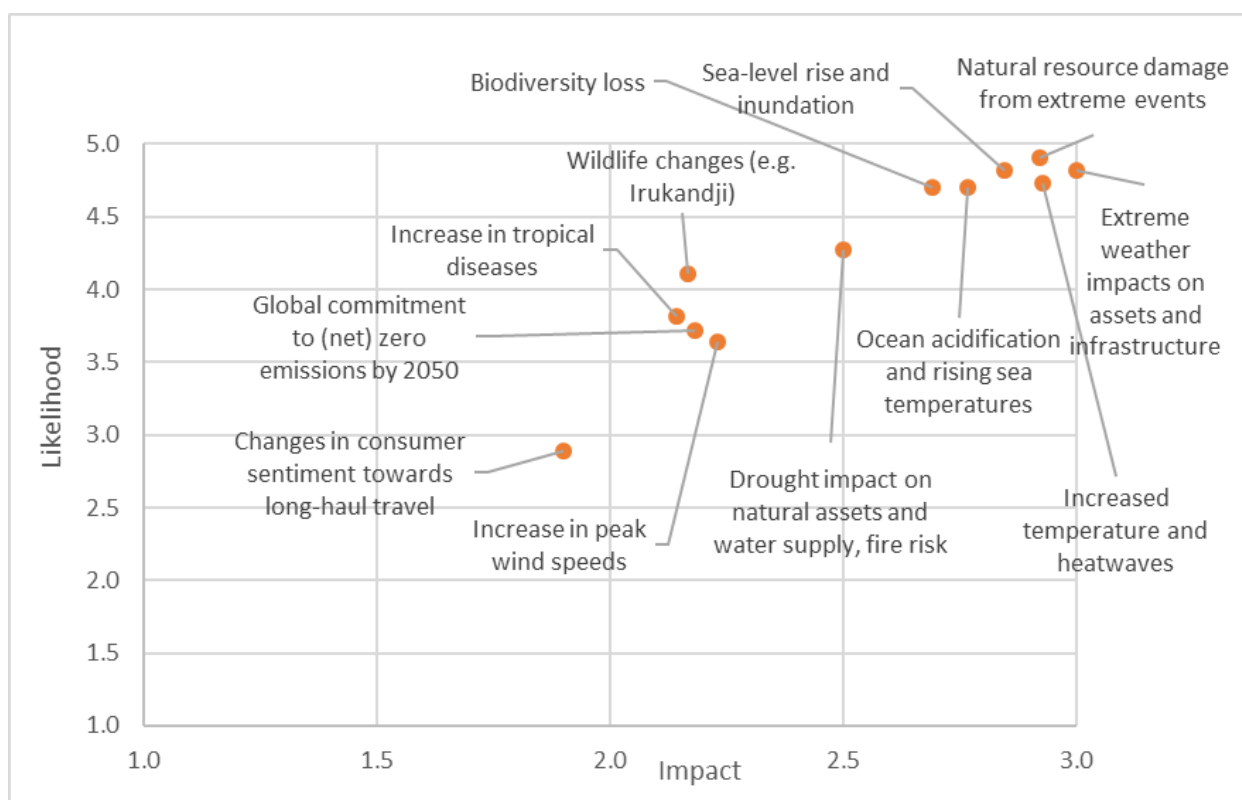


Figure 6. Risk matrix for tourism in Queensland.

Stakeholders from the same working group tables in the three workshops assessed opportunities by considering the benefit for tourism and the associated likelihood of a change or opportunity materialising. Figure 7 shows that the main opportunities lie around developing low-carbon transport alternatives, greening the industry, and providing incentives to those businesses that proactively and effectively respond to climate change. Stakeholders highlighted the importance of tourism in Queensland moving towards carbon neutrality. The feedback on opportunities clearly supports several building blocks of the vision for the Tourism SAP, including stewardship, greening the industry and sustainable (or green) marketing.

Other opportunities, such as responding to or preparing for changes in markets (e.g. a shift towards Asian visitors), developing new and diversified visitor experiences and supporting new products (in particular agritourism), were also seen as beneficial, but stakeholders reported that many of these are already being identified and addressed. QTIC, for example, through its Tourism Indigenous Champions Network, is already working with Indigenous groups to support tourism development and employment. The survey of QTIC members confirmed the strong support for product diversification and understanding international markets better to make future-proofed investments. One survey participant noted the opportunity for virtual tourism, in particular in relation to understanding, and contributing to, ecosystem services and carbon sequestration.

Geo-engineering, in particular in relation to the Great Barrier Reef, was not rated favourably. The idea of developing mid-shelf and outer shelf reef tourism was seen as inappropriate, partly because of the high fuel costs and the counterproductive impact this would have in terms of increasing emissions.

Respondents to the QTIC survey were less sure about the likelihood of low-carbon transport options.

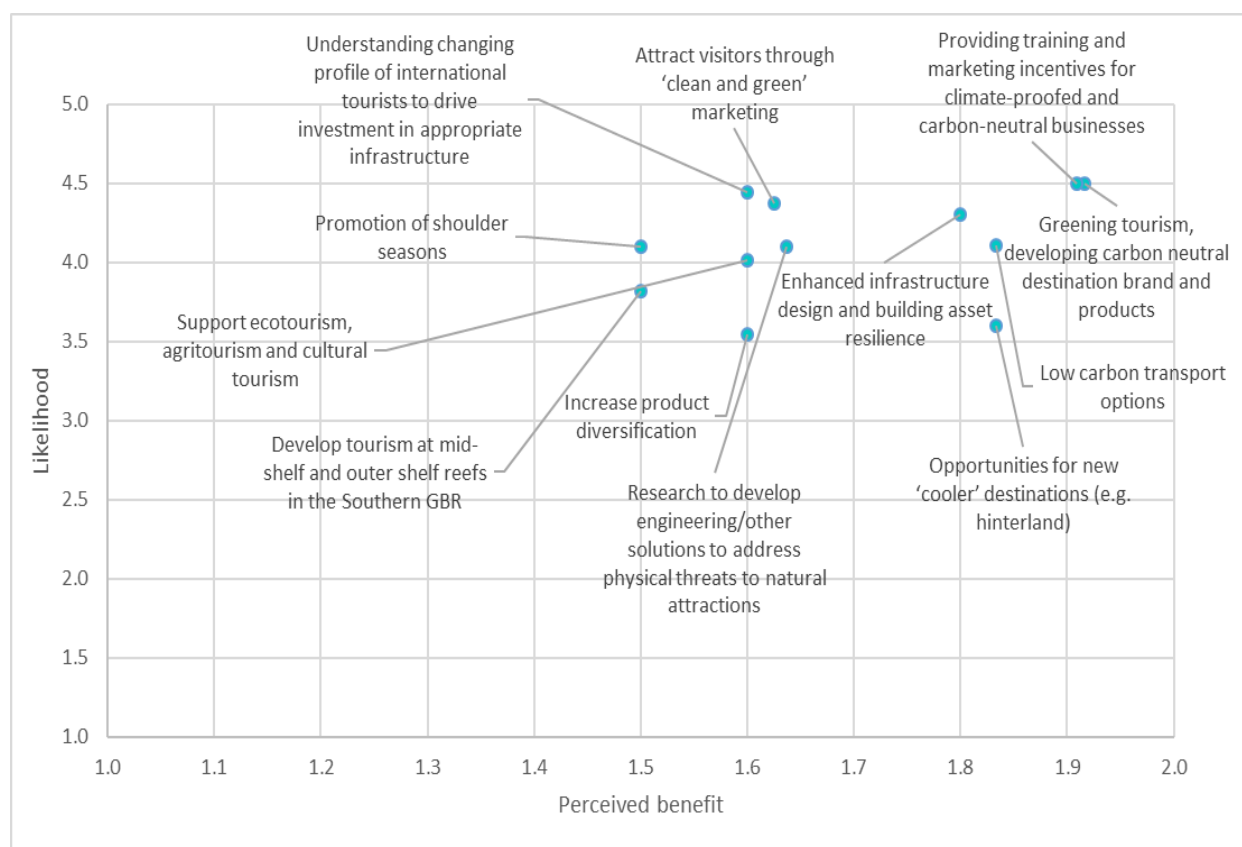


Figure 7. Opportunity matrix for tourism in Queensland.

Another opportunity raised in consultation was for tourism to work with other industries to drive government policy changes to better manage and enhance mitigation and adaptation mechanisms for Queensland and beyond. Working together with communities and government forms a building block of the plan's vision, and ensuring partnership with other industries (e.g. around supply chains) is likely to create greater business certainty and stability of policy settings, factors that are of critical importance in business decision-making.

CASE STUDY

LADY ELLIOT ISLAND



LADY ELLIOT ISLAND DEMONSTRATES

- Use of renewable energy sources and strong business case for energy efficiency
- 'Eco' product including carbon neutrality
- Conservation efforts
- Guest education



Lady Elliot Island (LEI) is an eco-resort located on the southern tip of the Great Barrier Reef. LEI has developed and implemented both an Environmental Policy and Environmental Management System. In changing practices, LEI received a return on investment over three and a half years and receives annual fuel savings of over \$250,000.

To achieve energy efficiencies, LEI replaced old fittings with new energy efficient equivalents, removed unnecessary appliances and switched fuel. LEI installed a hybrid power system that combines 140 square meters of solar panels (417 panels), battery banks and inverters reducing diesel consumption to less than 150 litres per day.

Other actions include: ceasing to sell plastic water bottles and plastic straws, the introduction of on-site composting apparatus, a 'flying green' carbon offset program and a 're-greening' program. LEI has developed the first dedicated Climate Change Trail and Tour around the island to highlight the impacts that climate change could have on a coral cay ecosystem.

Businesses responding to climate change

The Queensland tourism industry is broadly aware of the need to adapt to climate change and is already implementing a range of activities that constitute a climate change response, even though they may not be explicitly undertaken for this reason. The Climate Council observed:

But many individual tourism enterprises — hotels, resorts, agencies, airlines and operators — are increasingly becoming part of the solution by embracing renewable energy, energy efficiency and other positive initiatives.

Throughout this plan, there are examples of good practice case studies in Queensland tourism. The examples provided show that, in many cases, best practice involves addressing climatic hazards and low-carbon opportunities at the same time. An integrated approach is important to avoid unintended consequences from silo-type approaches. Businesses often use tools and templates that help them respond to new challenges. The following section provides an overview of adaptation and mitigation tools, as well as environmental certification opportunities.

Tools available to tourism businesses and decision-makers

Adaptation tools

A range of tools, guides and manuals exists to facilitate climate change adaptation. Table 1 summarises a number of tools that, while not specifically designed for tourism, are likely to be useful for various types of tourism stakeholders.

Table 1. A selection of tools that are useful for tourism stakeholders to prepare for climate change.

Category	Description	Example
General climate information	Climate data and projections of change	Climate Data Online Bureau of Meteorology (BOM) Climate Change in Australia CSIRO and BOM Climate Change in Queensland by Queensland Government
Risk assessment and resilience building	Tools for different stages of risk planning	AdaptNRM by Department of Environment, CSIRO and NCCARF
Adaptation planning	Helps identify climate impacts, vulnerabilities and adaptation options	Adaptation Scotland (for businesses)
Coastal risks, inundation and sea-level rise	Coastal adaptation planning, inundation maps, sea-level rise	CoastAdapt by NCCARF Coastal Risk Australia by the Cooperative Research Centre for Spatial Information (CRC-SI) SLR with Vertical Land Movement for Cities by ClimSystems
Flood management	Provides access to flood studies conducted all over the Australia	Australian Flood Risk Information Portal by Geosciences Australia

Category	Description	Example
Extreme events and hazards	Tool to understand the resilience of any building under extreme weather conditions	Building Resilience Rating Tool by Australian Resilience Taskforce with Insurance Council of Australia
Specific risks to business/infrastructure	Risk reduction for particular resources and buildings	Climate Institute Risk to Infrastructure NCCARF Infrastructure planning

Several adaptation tools are specific to tourism (see Table 2). To help prepare businesses and destinations for a range of climate impacts and assist with specific design (e.g. a resilient design of beach huts), tools were developed by the Samoa Tourism Authority and Climate UK. The 'Climate-proof your tourism business' tool developed by Climate South East and Climate South West is unfortunately no longer available online, highlighting the challenge of maintaining support at times when budgets are cut or organisations are restructured.

There are no specific adaptation tools for tourism in the Queensland context, although the Ecotourism Development Toolkit provides an opportunity for mainstreaming some climate adaptation needs into the development of new ecotourism facilities. The current toolkit provides useful information on the key steps towards developing and implementing an ecotourism product in Queensland. However, the limited scope of ecotourism may deter engagement with the tool. Already, the step of 'site selection' makes reference to avoiding locations where high-risk hazard areas exist (e.g. coastal inundation, bushfire, flooding and landslide), and a direct link to climate risks can be added. Assessing project viability might also need to take into account additional costs from climate change, for example, insurance. The step of planning the design and facilities already refers to resource efficiency, and this can be expanded with particular mention of the need to reduce the carbon footprint.

To address water efficiency and conservation, hotels can draw on the tools developed by the International Tourism Partnership in the United Kingdom. The Hotel Water Management Initiative in particular provides an excel-based spreadsheet to help measure and monitor a hotel's water use, similar to the more well-known exercise of carbon footprinting. EarthCheck, in partnership with Ecolab, has developed WaterCheck, which is a simple tool to help hotels reduce their water consumption. In addition to WaterCheck, businesses can use the Water Risk Monetizer to leverage best-in-class local water basin datasets and scientific methodologies to monetise business water risks.³³

The largest number of tools and templates exists for crisis management and disaster response. In addition to several pdf-based tools, the Commonwealth Government, in association with QTIC, provides a tourism-specific mobile phone app, 'Ready, Set, Go!'. This app was developed by EarthCheck and helps businesses prepare and respond to major disasters. However, this app is outdated and requires investment to ensure the support offered is relevant and functionality is maintained.

³³ WaterCheck and Water Risk Monetizer: <https://earthcheck.org/research/ecolab-earthcheck/>

CASE STUDY

GOLD COAST CONVENTION & EXHIBITION CENTRE



Gold Coast Convention & Exhibition Centre (GCCEC) is a world-leading sustainable meeting and events venue. GCCEC is renowned for operating at the highest environmental standards and championing environmental stewardship.

GCCEC is the largest regional convention centre in Australia, with an arena capable of hosting 6000 people and banqueting for up to 3500 delegates.

As an EarthCheck Gold Certified organisation, GCCEC takes a six-step approach to integrating sustainable practices across the organisation. This includes the development and implementation of sustainability policies, the benchmarking of data in 10 key performance areas, compliance across licences, leases, permits and agreements, the development of a risk assessment and sustainability plan, performance and communication.

Examples of sustainability practices include:

- state-of-the-art water saving technologies, e.g. waterless urinals, sensor flow hand taps
- recycled water for irrigation
- installation of LED lighting and use of natural lighting where possible
- variable speed air-conditioning
- control & programming of lighting from central location
- power policy requires event exhibitors to shut down unnecessary power overnight. Penalties apply for non-compliance
- 100% recyclable paper products
- implementation of a Waste Control System
- waste management education and training program for all staff & working with suppliers to minimise packaging waste on site
- 85% of ingredients for menus from local producers and suppliers
- introduction of the Environmental Management Plan & EarthCheck Program in the induction presentation for staff and contractors
- displays Environmental Policy at loading docks and foyer
- partnership with local charities to redistribute leftover food.

GCCEC DEMONSTRATES

- Climate leadership
- Waste reduction
- Energy efficiency
- Water efficiency
- Staff & contractor education
- Social and cultural management



Table 2. Tourism-specific tools that provide assistance with climate change adaptation.

Name	Description	Aspect of adaptation
Samoa Tourism Authority: Tourism Technical Guidelines for Climate Resilient Practices	These technical guidelines accompany the TDA Management Plans which describe the strategic direction for building resilience for tourism operators and their reliant communities. This document presents a series of guidelines as a 'toolkit' of options that are available to increase resilience to climate change risks, and as far as possible preserve the top attributes for tourism and overall community wellbeing.	This document provides guidance on building design and siting, on water efficiency and erosion control, and other aspects of resilience.
Queensland Government 2016: Ecotourism Development Toolkit	Ecotourism encompasses nature-based experiences that increase visitor appreciation and understanding of natural and cultural values. These experiences are managed to ensure they are sustainable, contributing to the wellbeing of the natural areas and local communities where they operate.	Focuses on regulatory assistance for developing business, but recognises risks and disruptions.
International Tourism Partnership 2016: Hotel Water Management Initiative (HWMI)	HWMI is a tool to enable hotels to measure and report on water use in a consistent way. HWMI is free of charge and can be used by any hotel anywhere in the world, from small guesthouses to 5-star resorts.	Water efficiency and conservation
International Tourism Partnership 2013: Water Risk Assessment	This tool is designed to enable easy uptake of information. Matrixes that summarise key risks, impacts and responses are also provided as an overview of the essential information. In addition to the literature included in the reference list, further reading sources can be provided on demand.	Water efficiency and conservation
EarthCheck: Ready, Set, Go!	The free Ready, Set, Go! mobile app, created by QTIC, EarthCheck and the Commonwealth Government, is designed to assist Queensland tourism businesses prepare and recover.	Disaster planning and response
Tourism Qld 2007: Regional Tourism Crisis Management Plan Template	This guide to preparing a Regional Tourism Crisis Management Plan provides several tools and templates for crisis planning, response and recovery.	Disaster planning and crisis communication
PATA 2011: Bounce Back: Tourism Risk, Crisis and Recovery Management Guide	Bounce Back provides a suite of tools, templates and guidance material for different stages of crisis planning.	Disaster planning
Don't Risk It.	This guide assists tourism businesses to prepare, respond and recover from a crisis.	Disaster planning
Tourism Victoria 2011: Crisis Essentials	This guide aims to provide essential information to tourism businesses about how to prepare for, respond to and recover from a crisis event.	Disaster planning

There are several gaps in the suite of available tools for managing climate risks and adapting to changing environments. Importantly, while there are numerous generic tools for adaptation planning (e.g. for local councils), no tool provides tourism-specific guidance. For example, aspects of destination image, diversity of visitor populations and seasonality are not covered in standard tools. Destination resilience, which is a combination of business resilience and community resilience, is a relatively unexplored concept and, as a result, there is limited practical guidance in this area. It may be possible to amend existing planning and resilience tools to include tourism parameters.

There are no specific tools that help tourism understand issues associated with climate change and health, although a health-focused Sector Adaptation Plan is in preparation. Some acute risks are probably covered within the relatively advanced crisis and disaster management plans (and associated tool kits), but more chronic risks, such as the spread of diseases, are not covered. There could also be safety issues arising from changing climatic and environmental conditions for tour operators, both marine and terrestrial.

Tools for reducing carbon emissions

For many years, tourism businesses have been engaged in the discussion on energy efficiency and carbon reductions. Energy consumption is of direct business interest as it forms — sometimes a substantial — part of business cost. In the airline industry, for example, fuel costs represent around 30% of operating costs, depending on oil prices. Thus, efforts to reduce energy use have been considerable by some businesses.

Accommodation is a major part of the tourism sector, and simple solutions to increase energy efficiency in hotels and resorts can reduce carbon emissions substantially. There is significant potential for the tourism sector to design and develop more efficient buildings and improve the sustainability of tourism accommodation and attractions, working towards high standards of energy efficiency and sustainable design. The Queensland Building Code sets out a minimum 6-star rating for both residential and commercial builds, and encourages higher performance for operators who want to show leadership.

Despite some gains in efficiency, these have rarely been sufficient to compensate for ongoing growth in the sector. Absolute reductions in carbon emissions will therefore only be achieved if incremental improvements are accelerated and scaled up.

A number of tools are available to help tourism businesses reduce their resource use (Table 3, page 34). In addition to tourism-specific tools, EcoBiz, for example, provides Queensland businesses with access to complementary tools and events, such as personalised coaching, site surveys, online benchmarking and workshops. Such external help often results in thousands of dollars saved on electricity, water and waste bills. Furthermore, the Green Building Council provides advice and case studies on improving the sustainability of buildings. The Queensland Government, through the Department of Housing and Public Works, provides an extensive list of booklets and manuals, fact sheets and useful weblinks.³⁴

The existing tools provide a starting point for measuring businesses' carbon footprint. The carbon calculator for reef operators is very valuable, and could be extended to develop a broader calculator for other businesses. The 'entry-level' calculator provided by EarthCheck free of charge provides a simple tool to broadly estimate carbon emissions and prepare for the next level of monitoring and management. However, despite some of these existing tools, there are some gaps. Ideally, the Queensland tourism industry should agree on one calculator that is used by businesses so there is consistency in measurement (including use of the same emission factors) and transparency. Building on existing eco-certification programs would be beneficial as well.

Further, there is no specific carbon management tool and calculator for tourism transport operations, and no other suitable fleet management tools could be identified. Specific advice for managing the carbon and water footprints of food³⁵ is also lacking, and a tool might be useful for hospitality service providers. There is limited guidance on measuring, benchmarking and managing carbon emissions for tourist attractions and activities, or for destinations (except for destinations that sign up to a certification program such as EarthCheck).

Finally, there is no tool that provides detailed information on the costs and benefits (including return on investment) of different types of investments or actions. For example, the installation of low-flow showerheads

³⁴ Ecobiz: <https://www.business.gov.au/assistance/ecobiz-queensland>; Green Building Council Australia: <https://new.gbca.org.au/>; Department of Housing and Public Works: <http://www.hpw.qld.gov.au/construction/sustainability/smartsustainablehomes/sustainablehomerresources/Pages/Default.aspx> and <http://www.hpw.qld.gov.au/construction/Sustainability/Pages/Default.aspx>

³⁵ Gössling, Garrod, Aall, Hille & Peeters, 2011

reduces the cost of water and energy (from hot water heating), but there is very little information on the actual savings, both in terms of physical units or dollars. Similarly, tourism businesses have limited access to information on the return on investment of installations such as solar panels or other equipment. Some of the information available for households might be relevant for small businesses. Benefits may be more than rely financial, for example, when there is a competitive advantage in appealing to 'green market' segments.

Tools for operators are also needed to communicate key messages to customers. Increasingly, visitors want to know more about their environmental and social impacts, and it is important that they be able to measure this, and for operators to be able to communicate this. The Pacific Asia Travel Association (PATA)³⁶ provides a range of tools on its website, including guidelines for responsible travel.

Table 3. Tourism-specific tools that provide assistance in climate change mitigation.

Name	Description	Relevant sectors
GBRMPA: GBR Carbon Calculator	Calculator for emissions: The first step to reducing the carbon footprint is to measure/monitor emissions using this calculator. This will identify where emissions are coming from. This will help focus efforts to reduce the carbon footprint. Resources and tips for reducing emissions are provided.	Tour operators
EarthCheck: Carbon Calculator	This calculator is a simple guide based on scientific averages, so actual emissions of the business may vary.	Any tourism business
NHTV 2015: Carbon Management Tool for Tourism Operators	The CARMACAL tool stems from the CARMATOP project on the measurement of tour package carbon footprints. It allows tour operators to integrate carbon management into their daily operations.	Tour operators
Queensland Government 2016: Ecotourism Development Toolkit	Ecotourism encompasses nature-based experiences that increase visitor appreciation and understanding of natural and cultural values. These experiences are managed to ensure they are ecologically, economically and socially sustainable, contributing to the wellbeing of the natural areas and local communities where they operate.	Ecotourism operators
UNWTO/EU 2016: Nearly Zero Energy Hotels (neZEH)	The neZEH e-toolkit is based on the UNWTO Hotel Energy Solutions toolkit, which has engaged 20,000 users worldwide and 1500 hotels in Europe in better understanding how to become energy efficient and more competitive. It is designed to increase the energy efficiency in the accommodation industry and encourage hotel owners to proceed to energy renovation projects towards zero energy targets.	Hotels
International Tourism Partnership 2016: Hotel Carbon Management Initiative (HCMI)	HCMI is a methodology and tool to enable hotels to measure and report on carbon emissions in a consistent way. It was developed by the International Tourism Partnership and the World Travel & Tourism Council. HCMI is free and can be used by any hotel anywhere in the world. Over 24,000 hotels globally are using HCMI.	Hotels
Enviromark 2001: CarboNZero Travel Calculator	Developed by Landcare Research, this calculator estimates emissions for tourist transport, accommodation and activities.	Tourists

36 PATA Sustainability and Social Responsibility: <http://sustain.pata.org/knowledge-hub/planet-case-studies/>

CASE STUDY

SHERATON NOOSA RESORT AND SPA



SHERATON NOOSA RESORT AND SPA DEMONSTRATES

- Benefits of using external expertise to reduce resource costs
- Simple changes can result in substantial savings



The Sheraton Noosa Resort and Spa (now Sofitel Noosa) signed up to EcoBiz in an attempt to reduce the amount of waste it produced through its operations, as well as to develop an eco-efficiency plan to improve its energy and water efficiency. Signing up to the free program realised savings of over \$23,000 in electricity costs, over \$16,000 in water costs and \$80,000 in waste costs.

Specific measures included separating kitchen food into wet waste bins, and a special bin with a biofilter and an air circulation system that quickly decomposes the contents into mulch collected and used by a local nursery.

Huge exhaust fans were running in the basement 24 hours a day, a massive power and cost drain. To improve efficiencies the resort connected the fans to variable speed drives linked to sensors in the car park. The sensors monitor gas levels in the car park and adjust the fan speed accordingly. Financial savings of around \$6500 a year have been realised through this change.

Further efficiencies were made in guest rooms. Every room in the resort has a spa bath. Instead of cleaning the spa every day, staff now place a sticker across the spa bath start button and plug. If a sticker is disturbed, that bath is to be sanitised and cleaned after the guest checks out.

Environmental certification

Achieving best practice in environmental management is critical to Queensland's overall position as a global leader in sustainable, and particularly nature-based, tourism. Certification is not only important for those who operate in parks or other protected areas, but also businesses or precincts that offer services and experiences in cities and at larger scale. Examples include golf courses, convention centres and airports.

Under current policy, the Queensland Government requires that commercial operators who offer guided tours in national parks or other protected areas must have ecotourism certification or commence the certification process within 12 months of entering into an agreement. More specifically, and as part of a transitioning process from previous policies, ecotourism operators at the most popular sites around Queensland are now required to obtain long-term Commercial Activity Agreements with mandatory certification conditions. The certification must be maintained for the life of the agreement.³⁷

While there are many different types of standards and certification schemes (nationally and globally), Queensland is home to two world-leading and recognised eco-certification schemes, EarthCheck and Ecotourism Australia. Both are endorsed by the Queensland Government as credible providers of certification. As a benchmarking program that collects detailed and third-party audited data on resource use, EarthCheck is well suited to measure and monitor the carbon footprint of businesses. Ecotourism Australia offers specific Climate Action Certification³⁸, which is a program focused on reducing carbon emissions. The certification process also considers climate change adaptation initiatives; it is relevant to all travel and tourism sectors.

Another sub-sector specific certification program is the Airport Carbon Accreditation (ACA) program. Launched in 2009 to empower airports to manage, reduce and offset their carbon footprint, the tool provides a four-tiered structure to recognise performance (see Figure 8). The scheme uses recognised approaches, including the three different scopes by the *Greenhouse Gas Protocol*. In 2017, the Sunshine Coast Airport was the first Australian airport to achieve carbon neutrality under the ACA program. The multi-tiered program could be adapted and implemented for businesses other than airports.

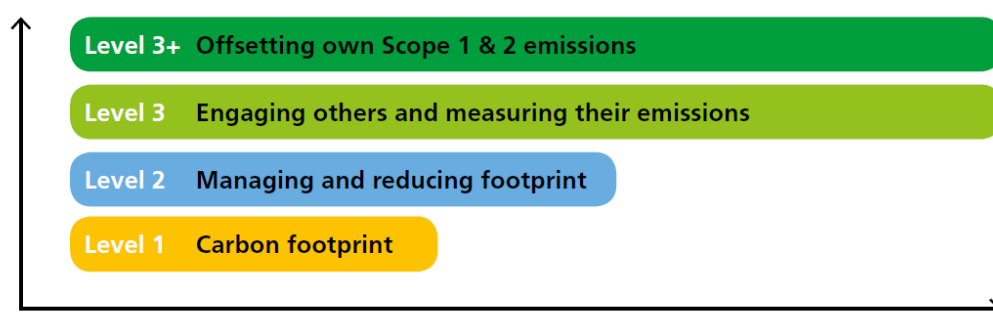


Figure 8 Airport Carbon Accreditation program. Note: Scope 1 emissions relate to in-house emissions; Scope 2 refers to emissions from electricity.³⁹

There is an increasing focus on progressing sustainable tourism at the destination level, and both EarthCheck and Ecotourism Australia offer destination-based environmental certification programs. Tourist destinations could also benefit from adopting community-focused approaches, such as Low Carbon Living (tested in the Blue Mountains, NSW).⁴⁰

³⁷ Department of National Parks, Sport and Racing, 2016 and *Queensland Ecotourism Plan 2016–2020*.

³⁸ For more information, see: EarthCheck <https://earthcheck.org/>; and Ecotourism Australia <https://www.ecotourism.org.au/> and <https://www.ecotourism.org.au/our-certification-programs/eco-certification-3/> for Climate Action Certification.

³⁹ Airport Carbon Accreditation, 2017: <http://www.airportcarbonaccreditation.org/about/what-is-it.html>

⁴⁰ Low Carbon Living, for more information, see: <http://www.lowcarbonlivingcrc.com.au>

CASE STUDY

NIGHTFALL WILDERNESS CAMP



NIGHTFALL WILDERNESS CAMP DEMONSTRATES

- Planning in sensitive environment and environmental certification
- Hazard management
- 'Eco' product including carbon neutrality
- Conservation efforts



Nightfall Wilderness Camp is located in the Gold Coast Hinterland. An application for tourist cabins was made to Scenic Rim Regional Council, supported by flora and fauna assessments and a bushfire hazard assessment.

Due to the environmentally sensitive location of the site, the development footprint was selected on the basis of it being previously cleared/disturbed. Best practice was demonstrated by voluntarily applying Best Practice Ecotourism Development Guidelines during the design phase. Approval conditions related to infrastructure provisions, natural hazard management (flooding and bushfire), car parking and access, water and wastewater, earthworks and vegetation management.

The ecotourism facility provides luxury glamping facilities for six guests at any one time in custom-designed safari tents. The development has been designed to be carbon-neutral with electricity generated by a grid connect solar power system. It also has onsite wastewater treatment and waste minimisation strategies that include composting. Nightfall Wilderness Camp's conservation program also seeks to restore damaged parts of the site and includes programs to monitor Christmas Creek and the glossy black cockatoo population. It has been designed to meet Ecotourism Australia's advanced ecotourism certification.

Relevant strategies and policies

Recent years have seen little recognition in relation to the climate change challenge and tourism in Australia. This plan provides an important opportunity to catalyse broader action across industry and policy-making. The Climate Council, in its 2018 report, critiques:

Federal and State Governments have generally underplayed or ignored climate change risks to tourism, with the Australian government's Tourism 2020 plan making no mention of the need to reduce emissions or increase sustainability of the tourism industry.

Queensland policy context

The Queensland Government has developed a comprehensive portfolio of initiatives⁴¹ to address climate change. The *Queensland Climate Change Response* recognises that 'Queensland's economy, industries and communities will also need to change' in line with global efforts to transition to low or zero carbon economies, as well as in preparation to adapt to projected changes in the climate and environmental conditions.

Two climate strategies were released in July 2017 and both recognise the relevance to the tourism sector. The *Queensland Climate Transition Strategy* discusses how the state will transition to a zero net emissions future that supports the economy, communities and the environment. The *Queensland Climate Adaptation Strategy* helps to prepare for current and future impacts of a changing climate. In addition, the *Queensland Strategy for Disaster Resilience* was also released in 2017 with a goal to make Queensland the most disaster-resilient state in Australia. Strengthening resilience is integral to adaptation.

The tourism sector can make a meaningful and fair contribution to the Queensland Government commitments. In particular, tourism needs to contribute to the transition to a low-carbon energy sector (noting Queensland's 50% renewable energy target by 2030) by investing in renewable energy sources and energy efficiency, and by accelerating the uptake of electric vehicles (see Figure 9) and other low-emission transport options. The discussions on carbon farming (CarbonPlus fund) are highly relevant for tourism, and there may be opportunities for tourism and tourists to develop and contribute to (local) carbon offsetting schemes.

⁴¹ <https://www.qld.gov.au/environment/climate/climate-change>



Figure 9. Map of the Queensland Electric Super Highway – a major opportunity for decarbonising tourism (see: <https://www.qld.gov.au/transport/projects/electricvehicles/map>).

Several programs are in place to help communities and councils adapt, and the tourism industry needs to ensure that its needs are considered in these, for example, in the QCoast2100 program, which provides funding to local councils to address coastal hazards, and the Queensland Climate Resilient Councils program.

The tourism industry must continue to support the implementation of the *Reef 2050 Long-Term Sustainability Plan*. The plan specifically mentions the importance of ensuring that tourism and recreation activities are ecologically sustainable, and a reference to environmental certification is made. It also refers to the aesthetic value of the Great Barrier Reef⁴² and that it needs to be protected through adequate planning and development decisions.

Clearly, the tourism industry sits within the broader environment of policy-making and investment. A considerable number of strategies and initiatives that support climate responses in Queensland are currently happening, and tourism will benefit indirectly from most of them. Figure 10 highlights the interconnectedness of tourism with other sectors and government activities.

⁴² More information on the aesthetic value of the reef can be found in Becken et al., 2018.



Figure 10. Key government policies and initiatives that are relevant to Queensland tourism (note: this is not a comprehensive mapping, but shows investment in key areas that will benefit and impact on tourism).


Previous tourism and climate change initiatives

While climate change activity and policy has been less prominent in recent years, considerable activity was evident between 2007 and 2010. Broadly, the activities of that time sit within the pillar of 'building resilience and productivity', as stipulated in the *Tourism 2020* strategy developed in 2009 by the federal government.

During this time, Queensland was clearly leading efforts in both climate change adaptation and the development of sustainable destinations.⁴³ Tourism Queensland, for example, worked with the CSIRO and commissioned a series of reports and assessments to identify key climate risks, and developed different 'climate storylines' to help the tourism sector prepare and adapt.⁴⁴ This work on Climate Futures also involved stakeholder workshops in Cairns and Airlie Beach and concluded '... tourism operators were extremely interested in increasing their understanding of climate change and of the steps they could take towards adaptation'. Figure 11 presents a timeline of key initiatives by government.

⁴³ For a review of Government strategies and actions, see Zeppel & Beaumont, 2011.

⁴⁴ Thomas et al., 2010.



2008	Climate Change and Tourism project by STCRC	Detailed studies of impacts and adaption needs in four case regions
2009	Tourism 2020 strategy	Pillar of 'building resilience and productivity'
2010	Great Barrier Reef Tourism Climate Change Action Group – Great Barrier Reef Tourism Climate Action Strategy	Sustainability of the tourism industry is 'inextricably linked' to the future health of the Great Barrier Reef. Strategy provides a framework of actions, promotes action by individual reef operators, leverages resources, coordinates related projects and delivers a mechanism for partnership
	Tourism Queensland – Tourism Environmental Indicators (including a baseline survey)	Indicators include – 'carbon footprint of the Queensland tourism industry', 'response to climate change by tourism operators', and 'carbon offsetting'
	TQ and CSIRO – Climate Futures	'Climate story-lines' and stakeholder workshop to raise awareness of climate change and enhance adaptation
2012	CSIRO and ASCOT – Building Tourism Business Resilience to Climate Change	Assist small to medium sized tourism operators develop strategies to manage climate risks and identify opportunities in their region
	DRET – Responding to Climate Change	Overview of tools, information portals and resources for Australia listed by state

Figure 11. Timeline of key strategies and projects on climate change and tourism.⁴⁵

Current tourism strategies and their link to climate action

Several strategies for tourism development in Queensland are relevant to this plan (Table 4). The recently released *Next Generation Tourism Planning: A guideline for planners in Queensland*, for example, specifically endorses the principles of sustainability and triple bottom line, noting that new developments have to be 'right' for the site, and planning has to consider the unexpected. Climate change as such is not mentioned, but considerable opportunity exists to incorporate climate change into existing planning documents and strategies.

The plan also directly supports Queensland Government's vision for ecotourism:

Queensland is an internationally celebrated ecotourism destination, delivering world-class interpretation and experiences that support the conservation of special natural places and unique Indigenous and cultural heritage.
(Queensland Ecotourism Plan 2016–2020)

⁴⁵ Lim-Camacho, L., Ashworth, P & Thomas, C., 2012; GBRMPA, 2009; Turton et al., 2009; Department of Resources, Energy and Tourism, 2012.

Table 4. Queensland tourism and tourism-related strategies and their reference (extracted as a quote) to sustainability, mitigation or adaptation.

Strategy	Reference to sustainability	Climate change relevant
DTESB 2017: <i>Next Generation Tourism Planning</i>	The research supporting this guideline suggests a framework for defining sustainable tourism development is required. It is a framework for tourism, development and planning success that is closely aligned to the familiar 'triple bottom line' approach measuring economic, environment and social inputs to sustainable development.	ADAPTATION: 'Overlay codes can be structured to support appropriate tourism developments in relevant overlay areas. For example, recreation spaces in low risk flooding areas, ... and tourism activities in areas of scenic amenity or historic museums or educational facilities in heritage overlay areas.' MITIGATION: 'Good design of buildings and facilities plays a big part in reducing environmental impacts of development, be they: energy use, water consumption, waste, transport, loss of natural habitats and biodiversity, or other effects.'
DTESB 2016: <i>Advancing Tourism 2016–2020</i> TEQ 2016: <i>Queensland Asia Tourism Strategy 2016–2025</i>	There is now an unprecedented opportunity to capitalise on our unique advantages to expand Queensland's market share and strengthen the industry's long-term sustainability.	ADAPTATION: 'Outcome: More resilient tourism industry.' MITIGATION: 'Roll-out electric vehicle charging infrastructure across Queensland, including the regions.'
Department of National Parks, Sport and Culture 2016: <i>Queensland Ecotourism Plan</i> (note: the toolkit is referred to in Table 3)	The plan's vision, guiding principle and promise set our path for the sustainable development of Queensland's ecotourism industry. The plan will foster best practice, innovative development that provides a positive contribution back to Queensland's natural areas and cultural heritage assets, community and economy.	MITIGATION: 'Ecotourism encompasses ... experiences that are managed to ensure they are ecologically, economically and socially sustainable, contributing to the wellbeing of the natural areas and local communities where they operate.'
TMR/DITD 2017: <i>Queensland Tourism and Transport Strategy</i>	Support the development of new and enhanced drive tourism experiences through: <ul style="list-style-type: none"> developing new touring experiences, including those targeted at priority markets continuing to support the sustainable development of the existing State Strategic Touring Route network. 	ADAPTATION: 'A robust and adaptive transport network is also essential to accommodate peaks in demand such as during major events, severe weather and natural disasters.' MITIGATION: 'A public transport network that provides a sustainable alternative to private vehicle travel in cities and major regional centres. Implement a network of 'electric superhighways' supporting awareness and growth in electric vehicles as a unique drive tourism experience.'

Strategy	Reference to sustainability	Climate change relevant
DTESB 2012: <i>Queensland Drive Strategy 2013–2015</i>	Given nearly a decade has passed since the first strategic touring routes were established, there is a need to strategically assess themed drives and the various structures which oversee them, with a view to developing a better understanding of where themed routes fit within the broader tourism context and identifying best practice sustainable governance models to inform discussions around a preferred approach to future development of new drive experiences and itineraries.	ADAPTATION: '... assist both residents and travellers to remain safe during an extreme weather event. Providing accurate, reliable and timely information on road closures and driving hazards to drive travellers is critical to this role. The ... information, and how it is presented is especially important for tourism operators to avoid instances where consumers unnecessarily cancel, amend or not book travel ...'
DSDMIP 2016: <i>North Stradbroke Economic Transition Strategy</i>	... striking a balance between sustainable economic growth and protection of the island's unique environment and cultural heritage.	
TEQ 2017: <i>The Great Barrier Reef: A tourism story</i>	Queensland's tourism industry is a custodian of the Great Barrier Reef – together the industry cares for and shares stories about its history and future.	MITIGATION: 'A high percentage of reef tourism operators are accredited under Ecotourism Australia's EcoCertification Program which ensures tourism operators on the Great Barrier Reef are of the highest environmental standards and deliver world class visitor experiences.'

Knowledge and resource gaps

Several important gaps have been identified. Within the broader policy environment, the most recent initiatives and commitments of the Queensland Government are likely to provide some tailwind and support towards making necessary transitions. However, in terms of current tourism policies, there is little consideration of climate change and sustainable tourism. An analysis of recent strategies and plans reveals insufficient guidance and priority, and this is likely to affect resource allocation and assistance to the industry.

*The health of the reef, agriculture industry and people and business in general in Qld will be contingent upon the immediate actions taken now and over the next few years.
(Tourism stakeholder, Brisbane)*

There are several barriers that slow down the transition towards a climate-resilient, low-carbon tourism industry. They relate broadly to a lack of specific knowledge, limited resources and capacity, and a lack of designated tools and assistance (Figure 12).

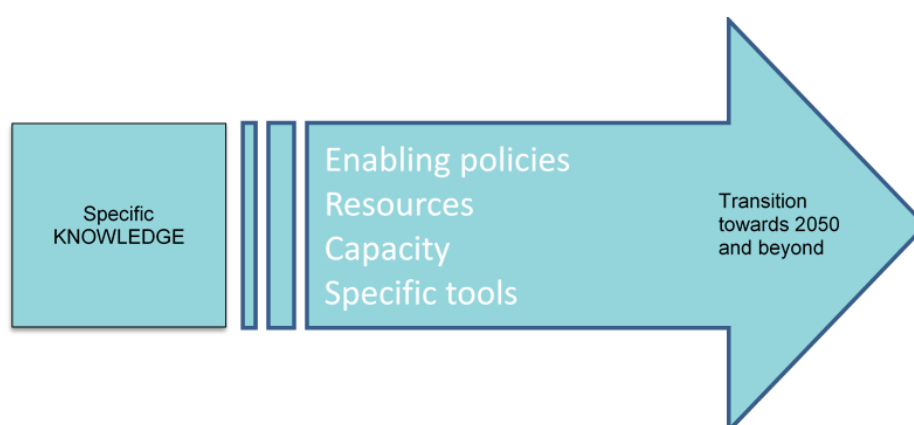


Figure 12. Overcoming key barriers to enable a successful transition for tourism.

Enabling policies are essential, but tourism stakeholders identified through the consultation that conflicting and inhibiting policies (e.g. building design or amendments) can prevent or hinder them from making 'green investments'. This was seen as particularly problematic when there was no level playing field between commercial operators and recreational activities. New entrants to the industry through the informal (sharing) economy may have a relative advantage by circumventing particular legislation. It was also identified that government-backed tourism investments and development need to demonstrate leadership in this space, driving innovation and good practice in resilience and low-carbon transition.

Speedy responses are required to emergency situations, and often policy does not allow for this. Stakeholders from the Whitsunday Islands reported on issues accessing approved funds from the Tourism Recovery Fund. A debrief on responses to Cyclone Debbie might expose some of these challenges and help advance a discussion for future improvements.

The Environmental Management Charge (EMC) already collected by reef operators on behalf of the federal government is perceived as problematic as funds do not flow back for the purpose of protecting the reef or assisting tourism operators to reduce their impact and become more sustainable.

Knowledge gaps

The *Great Barrier Reef Tourism Climate Change Action Strategy*, developed in 2009, revealed several knowledge gaps, some of which are still relevant and resonated with stakeholders at the consultation workshops.

While we have a much better understanding of climatic changes and impacts on the natural environment, in particular on coral reefs, we know relatively less about an increase in unpredictable weather, including increasing storm frequency and intensity during some times of year. Some of these events can be highly disruptive to tourism, and improved understanding of trends and short-term forecasts would be beneficial. The

Q-CAS describes a science program that includes projects designed to improve our understanding of the risks associated with extreme events, including heatwaves and major rainfall events.

There is also a need to better understand how natural assets can recover from stress or impacts, and whether human interventions can be successful. Examples in the Great Barrier Reef context include coral revegetation or rezoning of use areas and permits. However, the recovery of other ecosystems is important for tourism as well, including tropical rainforest, wetlands, coastal dune systems and any other habitat or asset that has been compromised by human activity or climatic events (or a combination of both). Better knowledge and training are required, as noted by one tourism operator:

*Education and training on managing natural assets and allowing species and ecosystems space to move under the changing climate ...
(QTIC survey respondent).*

Some stakeholders expressed concern about the negative spin off effects of degrading key assets. For example, a degrading reef might result in a downturn of visitors to Queensland more generally, which would jeopardise current and future investments in tourism attractions. More knowledge is required on the 'keystone' attractions and assets and how to minimise spiralling economic effects. It is also important to understand the overall economic and societal implications (in addition to environmental impacts) of climate change, in particular a deteriorating reef.

Monitoring tourism trends, and how climate change might affect visitation patterns, continues to be important. Environmental awareness of visitors from Asia is an important factor in developing carbon offsetting programs and showcasing best practice, and more knowledge on how to promote such action with these new markets would be useful. At this stage, relatively little is known about how to best engage visitors from these markets, and how campaigns should be adapted to different cultural backgrounds or market segments.

More knowledge on the availability of 'green' and 'climate-neutral' technologies and strategies is also needed. Assessing the costs and benefits of low-carbon and climate-resilient technologies and strategies is necessary to provide specific information on investments to tourism businesses.

Some barriers mentioned by stakeholders related less to knowledge per se, but more to communication. As already identified in the 2009 CRC for Sustainable Tourism project, tourism businesses perceived that government decision-makers do not fully appreciate the economic importance and contribution of tourism, and that more support is needed to assist tourism operators in their transition towards a climate-resilient and low-carbon industry. Tourism businesses in this present consultation expressed similar views, highlighting the considerable benefits that tourism delivers to the state.

Communicating tourism's role in a unified way is therefore important. It is often perceived that the tourism industry, unlike agriculture, mining and fishing, lacks a strong and cohesive voice to advocate successfully for support. Made up of many small businesses and independent players, the tourism industry struggles to be recognised in the political arena. Several stakeholders suggested the establishment of a 'Carbon Neutral Tourism Association' to further strengthen the industry's collaborative power.

Conflicting information on key topics, including the state of the reef, was seen as a major barrier to adaptation. In the bigger picture, decisions by the Queensland Government, for example, in relation to the export of coal, were seen to conflict with the tourism industry positioning itself successfully as a green industry and sustainable destination.

Resource and capacity-related barriers

Tourism businesses have a high entrepreneurial capacity and they have 'learned to live' with, and adapt to, constant disruptions and changes, including those related to weather and natural resources. Accordingly, the 'organic knowledge' and skills are relatively high. However, in terms of dealing with longer term and unprecedented changes, capacity is limited. This is not surprising, as business horizons are naturally shorter and small businesses in particular are notoriously short of staff and other resources. Future-gazing is therefore not part of the everyday portfolio of imperative activities, within both tourism businesses and tourism organisations. More support is therefore required, and this was clearly articulated by some stakeholders.

Better guidance and assistance was also demanded in terms of helping to 'green the business'. Stakeholders

noted that it is often difficult to obtain and evaluate all the information available, let alone spend time on populating carbon calculators or investigating new and possibly unproven equipment, when more mainstream approaches appear easier and less risky. There could be an opportunity for specific tourism sustainability training, either for operators directly, or for experts who are then deployed to work with tourism businesses.

*Assistance in strategic planning and implementation of on the ground actions to increase adaptive capacity of natural and business assets ...
(QTIC survey respondent).*

Businesses often use tools and templates that help them assess their status quo and inform decision-making, for example, for new products and investments. Tourism stakeholders noted that tools for tourism should be simple to use, be sufficiently robust to be credible, and be used by everyone to avoid greenwash and free riding.

*Government providing tools and training to businesses and communities for decarbonising and diversifying operations ...
(QTIC survey respondent).*

A number of tools were identified that are being used (or could be if they were promoted more), but substantial gaps emerged as well. Most notably these relate to:

- tourism-specific vulnerability assessment tools that provide specific advice on addressing issues of seasonality, changing visitor portfolios and other tourism-specific challenges. A tool to help build destination resilience could be useful
- no universally used carbon calculator for tourism that enables a comparison of carbon footprints between businesses and over time
- climate change health and safety issues for tourism being largely unexplored, and tools to assess the risk and develop responses being missing
- a lack of specific tools to manage the carbon emissions of vehicles, food (supply chain, embodied carbon and waste) and integrated products (e.g. events)
- no tool that provides financial advice (e.g. return on investment) on sustainability investments specific to tourism facilities (e.g. hotels).

Having insufficient resources and limited investment options to consider, develop and implement climate change responses is a major barrier. For instance, existing schemes and funds may not support climate resilience or decarbonisation efforts, and green bonds or specific climate bonds are only suited for large-scale projects over a longer (project and investment) timeframe. Thus, finance options are often not suitable for smaller tourism businesses.

Beyond the direct financial capacity (e.g. to invest into new equipment or sustainability staff), the marginal costs of operating small to medium sized businesses, especially in regional areas, are prohibitive. Retaining and obtaining expertise remote from major centres is recognised as a critical barrier.

Delivering on the vision

Tourism stakeholders consulted in the development of this sector plan expressed a clear vision (Figure 2, page 8), and this section provides recommendations for how to deliver the necessary changes and transition. The actions that are detailed in this section are structured by the building blocks of the vision, namely:

- resilient businesses, destinations and communities
- stewardship and education for healthy natural assets
- green tourism industry leading the way towards carbon neutrality
- diversified product for quality visitor experience
- sustainable branding and marketing
- the tourism industry is united in working together with government and communities.

This section also refers to the other Sector Adaptation Plans that are being supported by the Queensland Government. It is also important to recognise and capitalise on crosscutting issues such as 'community and social services', 'finance and insurance', 'natural resources and environment' and 'research and development'.⁴⁶ Where possible, suggestions are made about who would be responsible for delivering a particular action and in what timeframes. For some actions, additional resources will be necessary; as such these recommendations are subject to resources and funding to enable delivery. Some actions may be delivered through realignment of existing activities or resources.

Strengthening adaptation

Improving climate preparedness is closely related to risk management and investment. Insurance companies understand that they have a major role to play. Insurance can enhance adaptive capacity through the financing it provides subsequent to an insured event, and this has proven existential for tourism companies that faced major losses as a result of natural disasters. Appropriately designed insurance products can incentivise adaptive behaviour, for example, by providing premium discounts for risk mitigation activities. This could be attractive for tourism operators. Two types of home insurance products already reward certain upgrades that protect properties from extreme weather events (Suncorp's Protecting the North and IAG's Insurelite). Finally, the threat of insurance withdrawal can also compel risk reduction behaviour.

A recent report commissioned by NCCARF⁴⁷ provided insight into climate adaptation finance. It concluded that there are various types of options to finance adaptation, including bonds, balance sheet and project financing, certain types of revolving funds, the field of impact investment, two specialist bank products (environmental upgrade agreements and energy efficiency loans), microfinance and crowdfunding. Many of these existing mechanisms could be extended to include adaptation features if appropriate standards and assessment schemes are developed.

While bonds are typically for larger scale projects, there is the possibility of developing 'clusters'. The investment into solar-powered boats in the Whitsunday Islands was discussed by stakeholders as one example where economies of scale could be reached through collaboration. The Australian Government, through its Export Finance and Insurance Corporation (EFIC)⁴⁸, offers loans for those businesses involved in export. The loans can be small or large, short- or long-term, and they usually address some form of market failure, where the business fails to obtain a loan from its bank. Tourism is explicitly recognised in this scheme, and climate response-related loans may qualify for assistance.

⁴⁶ These crosscutting issues were identified in an internal document by NRM Regions Queensland. The document was developed to encourage and enable core consistency between sectors in responding to climate change risks.

⁴⁷ Banhamli-Zakar, Ware, Edwards, Becken & Cox, 2016

⁴⁸ EFIC: <https://www.efic.gov.au/business-solutions/small-business-export-loan/>

Operators also mentioned specific government schemes, such as the previous export grant mechanism, which assisted tourism businesses in developing international tourism. Such a fund could now be created to 'manage' tourism and the natural resource, rather than investing in promotion, which was seen by some as less important, given the existing pressure on resources and 'over tourism' in some areas.

Vision	Response	Recommended responsibilities	Timeframe
Resilient businesses, destinations and communities	<p>Financial instruments and support:</p> <p>Identify insurance needs and potential need for government to respond to market failures</p> <p>Develop business support schemes/products that will help businesses secure appropriate insurance and/or finance in market</p> <p>Work with financial organisations to develop finance mechanisms for SME businesses and adaptation finance</p> <p>Review disaster packages (e.g. Tourism Recovery Fund, Cyclone Debbie) to ensure effective implementation for quick recovery</p>	<p>Finance:</p> <p>QTIC and DITID to encourage insurance and finance providers to provide terms that are favourable to tourism businesses. Resources required as not in current scope of activities</p> <p>Input from other departments/agencies may be needed (e.g. climate change, small business)</p> <p>Policy:</p> <p>Review past disaster responses and recovery options for the tourism sector, involving DITID and other parts of government (e.g. QRRRA, OSB, Treasury, DPC & TEQ)</p>	Immediate (1–2 years)
	<p>Great Barrier Reef:</p> <p>Ensure that all relevant plans and policies for tourism consider climate change risks</p>	<p>Office of the Great Barrier Reef (OGBR) with GBRMPA, and Traditional Owners</p> <p>Tourism industry to support implementation of the Reef 2050 plan</p>	Medium term (3–5 years)
	<p>Increasing destination resilience:</p> <p>Regional tourism organisations to work closely with local government to identify existing resilience programs and adapt them to tourism where possible</p> <p>Take a cluster approach (see also green destinations below) to reach economies of scale and benefit from mutual learning</p> <p>Understand 'limits to adaptation'</p>	<p>Regional tourism organisations and local governments to work together to align resilience activity and promote to industry</p> <p>Tourism operators to engage with programs promoted</p> <p>Research organisations to identify limits to adaptation for tourism (additional funding required)</p> <p>Research on the broader economic impacts of a declining GBR, and the analysis of a range of adaptation scenarios (additional funding required)</p>	Immediate to medium term (1–5 years)
	<p>Business adaptation and resilience:</p> <p>Develop tourism-specific adaptation/resilience tools and guidance for tourism businesses</p> <p>Identify what businesses can do proactively to be prepared for extreme events and achieve a fast recovery.</p>	<p>QTIC in partnership with TEQ and other industry associations and knowledge providers (e.g. universities or consulting firms and with DITID) to align with broader business capability work (additional funding required)</p> <p>Tourism operators to engage with tools and information</p>	Immediate (1–2 years)

Considerable opportunity exists in the close relationship between tourism and the natural environment. Demonstrating stewardship for the environment is one of the recognised strengths of tourism. Below are specific responses that can support and strengthen stewardship impact.

Vision	Response	Recommended responsibilities	Timeframe
Stewardship and education for healthy natural assets	<p>Awareness:</p> <p>Develop an awareness campaign for the industry to develop a common understanding and commitment towards stewardship, including a clear external communication component</p> <p>Target visitors in environmental/conservation campaigns</p> <p>Develop volunteering programs and advance opportunities for citizen science</p>	<p>QTIC with TEQ to develop a climate awareness campaign for industry and visitors (additional resources or reallocation of existing resources)</p> <p>DNRME through natural resource management plans to include visitors in education and citizen science programs. Link with RTOs and research organisations (additional resources required to establish programs)</p>	<p>Immediate to medium term (1–5 years)</p>
	<p>Certification:</p> <p>Consider extending long-term certification for operating in national parks and protected areas to cover a broader geographic scope and key environmental indicators (e.g. carbon monitoring)</p> <p>Work with reef operators who have not obtained certification to ensure they meet minimum standards and raise awareness and interest for them to undergo certification</p> <p>Expand Savannah Guides program to ensure that operators within natural environment are delivering stewardship messaging competently</p> <p>Tourism industry to support Queensland Parks and Wildlife Service, Department of Environment and Science in the implementation of the actions under the <i>Ecotourism Plan 2016–2020</i></p>	<p>Relevant government departments and organisations (e.g. GBRMPA) to collaborate and agree on responsibilities, building on current initiatives, e.g. master reef dive and discovery course (within existing resources)</p> <p>QTIC and other industry associations to work with those stakeholders who develop and implement relevant plans, including Biodiversity and Ecosystems SAP, Ecotourism Plan and the Reef 2050 Plan</p>	<p>Immediate (1–2 years)</p>

'Tourism is a community builder', as noted by one stakeholder in the Airlie Beach workshop, and as such tourism provides an important opportunity for regional communities. Working harmoniously with the environment and communities is important for enhancing existing products and developing new ones. While it was noted by stakeholders that product diversification is happening regardless of climate change, it is beneficial to ensure new products contribute to resilience building and are also low-carbon. It was noted by stakeholders that there are broader benefits in fostering cultural and Indigenous tourism.

Vision	Response	Recommended responsibilities	Timeframe
Diversified product for quality visitor experience	<p>Build on existing initiatives to invest in new products, including agritourism and cultural tourism — including through the use of technology</p> <p>Potential to develop 'learning experiences' that combine stewardship, cultural values, volunteer activities etc. with product development</p>	<p>DITID and TEQ to provide support programs for product development and innovation that explicitly support climate risk management</p> <p>DITID and other government agencies to review state government funding for new tourism developments to incorporate green standards, whereby standards for risk management and carbon performance need to be developed</p> <p>QTIC to work with Traditional Owners and DNRME to ensure best outcomes from new products and developments for Indigenous groups, building on QTIC's Tourism Indigenous Champions Network</p>	Medium term (3–5 years) or earlier

Low-carbon transition

Greening the industry was seen as one of the key measures for tourism. Helping businesses reduce their environmental footprint (with a mix of carrots and sticks) was welcomed by operators. The need to move towards carbon neutrality was recognised and the industry expressed aspiration to be at least in line with Queensland's decarbonisation targets, if not better. Reducing emissions is the driver, but carbon offsetting schemes will play an important role, and it was suggested they need to be locally relevant or aligned to local projects, and consider multiple ecosystem services (e.g. erosion control, biodiversity).

Vision	Response	Recommended responsibilities	Timeframe
Tourism industry leading the way towards carbon neutrality	<p>Decarbonisation pathway:</p> <p>Develop a communication plan and awareness campaign for the industry to engage in, and contribute to, the goal of greening Queensland tourism</p> <p>Investigate tourism's contribution to Queensland GHG emissions and develop a plan for how tourism can contribute to the process of decarbonisation in line with Queensland Government targets</p>	<p>QTIC and TEQ to lead awareness campaign (see above)</p> <p>DES and DITID to work together to estimate the tourism carbon footprint and develop a baseline using a science-based targets approach to develop an emissions pathway for tourism (additional resources required)</p>	Immediate (1–2 years) but requires medium to long-term implementation
	<p>Carbon measurement:</p> <p>Measure-to-manage: promote carbon monitoring and reporting by developing a Queensland-wide quality rating for operators with carbon emissions as one key indicator</p>	<p>QTIC in partnership with GBRMPA to lead development of a carbon calculator (with benchmarking capability) for use by all tourism businesses in Queensland</p> <p>Tourism operators to engage with tool and benchmarking opportunities on development</p> <p>QTIC to ensure maintenance/updates (additional resources required)</p>	Immediate (1–2 years)

Vision	Response	Recommended responsibilities	Timeframe
Tourism industry leading the way towards carbon neutrality	<p>Green business design/practices:</p> <p>Set a target for the proportion of new tourism buildings that exceed the minimum 6-star rating of the Queensland Building Code</p> <p>Develop sustainable procurement policies for businesses to manage supply chain risks and carbon footprints</p>	<p>QTIC to consult with relevant industry associations to set a target for exceeding minimum performance for green practices and to ensure resilience</p> <p>QTIC to work closely with agencies delivering the Built Environment and Infrastructure SAPs</p> <p>DITID, QTIC and TEQ to promote tools and certification, e.g. EcoBiz, Green Building Council Australia, EarthCheck and Ecotourism Australia</p> <p>DITID, working with Office for Small Business, to develop a green mentor/business assistance program to help tourism businesses with investment decisions (additional resources required)</p> <p>DITID to commission an expert/consulting firm to develop sustainable supply chain guidelines for tourism businesses (additional resources required)</p>	<p>Immediate to medium term (1–5 years)</p>
	<p>Destination performance:</p> <p>Develop 'green destinations' across Queensland to achieve economies of scale and provide the opportunity for green branding and competitive advantage (locally and state-wide)</p> <p>Facilitate networking and sharing of good practice</p>	<p>RTOs to address decarbonisation and environmental practices in the development of destination strategies/plans. No additional resources required, but assistance from other organisations with tools and templates</p> <p>RTOs facilitate green networking events, within existing resources</p> <p>RTOs/LTOs to work with local government to make use of existing tools/approaches (e.g. Low Carbon Living, destination certification programs)</p> <p>RTOs and local government to work with DRNME to align activities and ensure tourism needs are included in natural resource management plans</p>	<p>Immediate to medium term (1–5 years)</p>

Vision	Response	Recommended responsibilities	Timeframe
Tourism industry leading the way towards carbon neutrality	Carbon offsetting: Develop carbon offsetting programs for businesses and customers. Ensure their benefits flow back to the destination (e.g. by developing localised programs)	DES with DOTE and other key players (e.g. QTIC, airlines, NRM agencies) to develop criteria for high-integrity tourism carbon offset programs, aligned to existing and accepted standards Airlines to work with local tourism groups (RTO, LTOs and/or councils) to explore opportunities for localised carbon offset projects and promoting local offset as priorities DRNME to ensure alignment with opportunities identified in natural resource management plans and connect with Biodiversity and Ecosystems SAP	Medium term (3–5 years)
	Electrification: Accelerate uptake and investment into the electrification of the transport system and fleet (in combination with decarbonising electricity supply through increased use of renewable energy)	DITID to work with Department of Transport and Main Roads on developing tourism-specific policies or incentives for electric vehicle uptake. Connect with Department of State Development, Manufacturing, Infrastructure and Planning (DSDMIP) to ensure alignment	Medium to long term (over 3 years and ongoing)

Greening the industry can be accelerated considerably by green marketing. Developing a brand as 'world leader' in nature tourism or 'climate leader' was seen as desirable. This requires shifts in the current marketing. It is possible to create a virtuous circle by developing greener products and destinations, specifically marketing these and building a green brand, attracting green tourists who support those businesses, and investing further in more sustainable experiences.

Vision	Response	Recommended responsibilities	Timeframe
Sustainability marketing and branding	Great Barrier Reef: Develop a clear communication strategy for the Great Barrier Reef and other 'high-risk' natural assets Monitor consumer sentiment and perceptions of environmental change at key assets	TEQ to work closely with the OGBR and GBRMPA and the RIMRep monitoring program. Within existing resources, but may require alignment	Immediate development, but medium to long-term implementation (2–5 years)
	Sustainability branding: Provide marketing incentives to high-performing operators (e.g. through a recognised certification scheme and by preferential listing) and create mechanisms to identify greenwashing Showcase champions to share information on best practice and innovation. Create a network of green leaders	TEQ, with input from EarthCheck and Ecotourism Australia, to develop a strong Queensland based quality system (e.g. building on best of Queensland) for businesses that includes key environmental indicators. Ensure that there is transparency and accountability for businesses RTOs and TEQ to prioritise listing of certified tourism businesses or develop a 'green' search function QTIC and other key industry organisations to investigate and promote opportunities for booking engines to display 'carbon performance' as one of the search criteria TEQ and QTIC to develop sustainability communication tools/templates for businesses to share with their customers (additional resources required)	Immediate to medium term (1–5 years)

Governance

Governance and leadership are important for delivering the recommendations of this tourism sector plan. At present, there are many enabling policies, but also policies and strategies that impede successful adaptation. One critical challenge for tourism is how to reconcile growth with effective climate responses, in particular absolute reductions in carbon emissions. The current institutional set up promotes growth, and resources are allocated accordingly.

Ultimately, the transition requires change by everyone, including the federal government through its broad policy settings and international commitments, as well as every single tourism operator who will have to consider climate risks and carbon emissions in their investment and operational decision-making. As noted in one of the stakeholder workshops, it is important that:

*... businesses and destinations are prepared to change directions and improve their operations as the environment changes.
(Brisbane stakeholder).*

Figure 13 shows the key organisations and stakeholders who will play a role in implementing the Tourism SAP. Recommended responsibilities have been identified in the sections above.

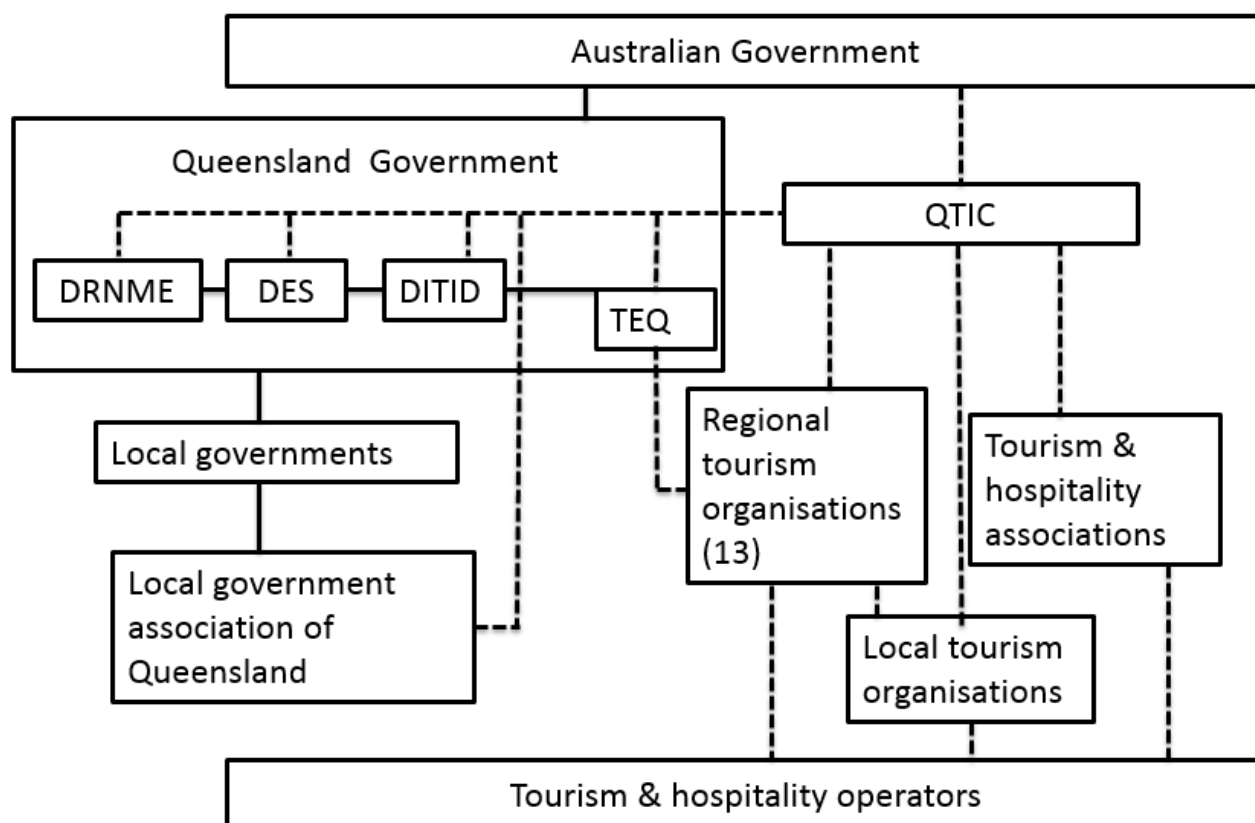


Figure 13. Tourism sector structure in Queensland, and organisations relevant for implementing this plan.

At present, Queensland has no specific mechanism to monitor and manage the impacts of tourism. As a result, issues are dealt with in a reactive manner by organisations or players who have limited mandate or capacity to do so. Since this tourism plan is an industry-driven plan, it has been agreed by the consultative committee for this plan that QTIC will continue to facilitate an industry committee or group that will drive and coordinate actions. QTIC will take a lead role in overseeing the coordination of climate change responses and action. The implementation of the plan will be a multi-agency effort and, as mentioned above, relies on the contribution of everyone involved in tourism.

Vision	Response	Recommended responsibilities	Timeframe
Tourism industry is united in working together with government and communities	Policies: Strengthen all tourism strategies and plans to include climate change risks and opportunities Drive government policy in the area of climate change and industries	DITID to amend the <i>Next Generation Tourism Planning</i> guideline to include specific recommendations on climate change responses TEQ and RTOs to include climate change in their next strategic plan RTOs to include climate change in destination management plans DES to work with partnering industries to drive a whole-of-government and whole-of-community approach to managing climate change through effective policy	Immediate (1–2 years)

Vision	Response	Recommended responsibilities	Timeframe
Tourism industry is united in working together with government and communities	<p>Leadership:</p> <p>Establish a permanent steering group to meet at least twice a year to discuss implementation progress and need for updates. Update the SAP at least once every three years</p> <p>Develop a monitoring system to evaluate the outcomes of the Tourism SAP</p> <p>Implement a structure for specific climate actions that involves key sector organisations, RTOs, local government and other organisations critical to the successful transition of tourism (see Figure 13 above)</p>	<p>QTIC to chair the permanent steering group and lead the regular updates of the Tourism SAP. Additional resources may be required for the updates</p> <p>RTOs to set up climate change action groups at destination level. Additional resources may be required</p>	Immediate to long term (from now on)
	<p>Monitoring & evaluation:</p> <p>Explore opportunities for amending KPIs of government managers to include the delivery of environmental outcomes for tourism</p> <p>Develop a monitoring plan for the implementation of the Tourism SAP, including key indicators and targets</p>	<p>DITID to lead discussion on how to modify performance measures to better facilitate evaluation to improve outcomes from government investment in tourism</p> <p>QTIC, with the support of the permanent steering group, to develop a monitoring and evaluation plan for the implementation of the Tourism SAP. Additional resources will be required</p>	Medium to long term (over 3 years and ongoing)
	<p>Green fund:</p> <p>Undertake consultations and economic analysis in consultation with industry to establish a green fund to incentivise further industry action</p>	<p>DITID, TEQ and QTIC to develop a partnership approach. Resources for assessment required</p>	Immediate to medium term (1–5 years)

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Climate
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