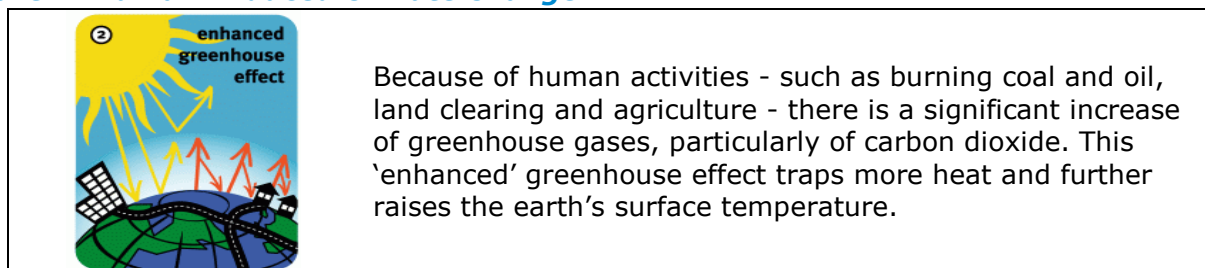


What is Climate Change?

While there is some debate over the science of climate change, the latest report of the Intergovernmental Panel on Climate Change (IPCC)¹ states that “the warming of the climate system is unequivocal ...”². There is evidence already of changes in weather conditions (i.e. temperature, rainfall and wind), as well as rising sea levels.

Human-induced climate change (see Figure 1) is defined by many as the greatest global risk that potentially threatens our economic, social and environmental security. Climate Change occurs as a result of an excess of naturally occurring Greenhouse Gases (GHG) in our atmosphere trapping heat and creating noticeable and measurable changes to our environmental conditions. Many of these greenhouse gases³ are released from burning fossil fuels.

Figure 1: Human-Induced Climate Change

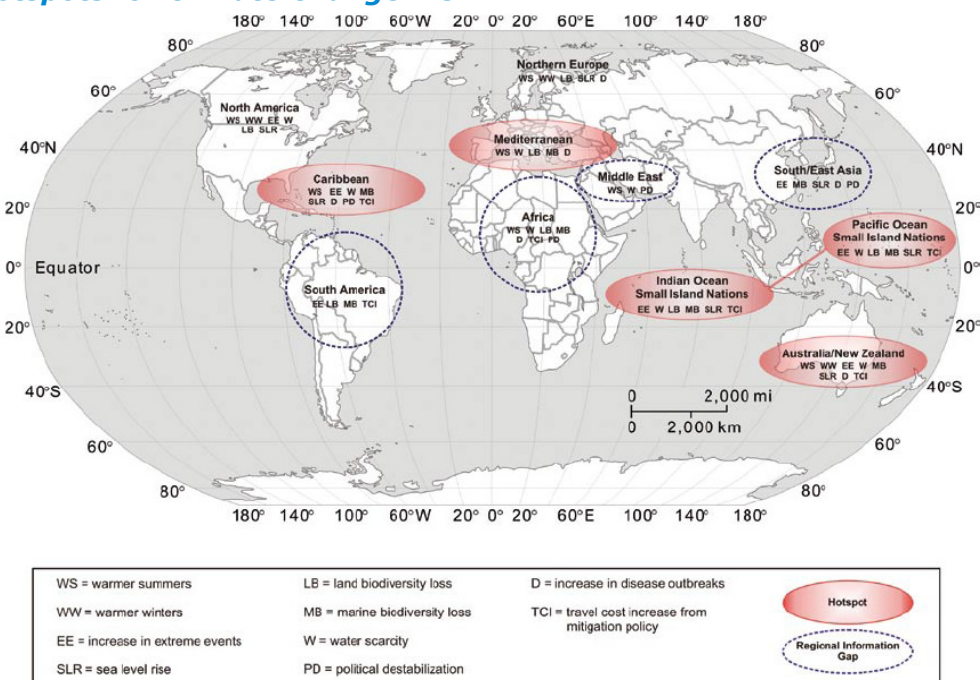


Because of human activities - such as burning coal and oil, land clearing and agriculture - there is a significant increase of greenhouse gases, particularly of carbon dioxide. This 'enhanced' greenhouse effect traps more heat and further raises the earth's surface temperature.

Source: Queensland Tourism Industry Council

The Second International Conference on Climate Change and Tourism in Davos October 2007 identified key risk tourism 'hotspots' for climate change risk.

Figure 2: Hotspots for Climate Change Risk



¹ The IPCC is a scientific intergovernmental body tasked to provide information on climate change by assessing and recapitulate the latest research on the topic.

² See [IPCC](http://www.ipcc.org)

³ The main greenhouse gases are carbon dioxide, methane and nitrous oxide. They are caused by different sources, e.g. energy use (electricity, transport), land use change, waste landfills and agriculture / cattle breeding. They are summarized as Carbon Dioxide Equivalents for comparing the global warming effects of different greenhouse gases.

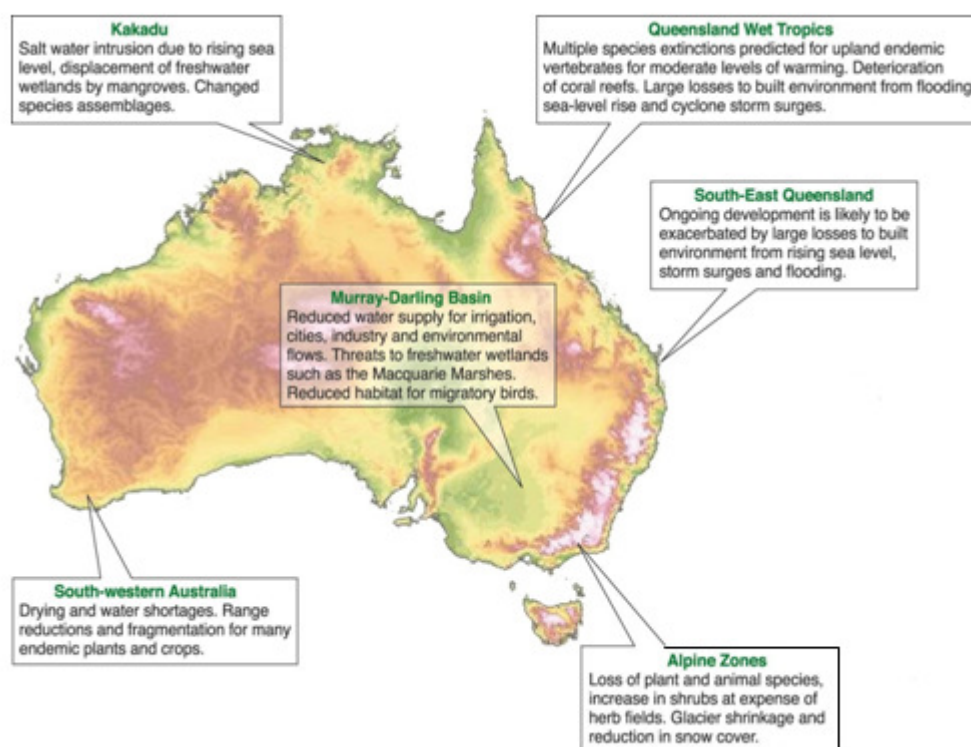
Key Risks of Climate Change

Australia is recognised as a hotspot for risk exposure through Climate Change. Australia faces a number of significant risks, these include:

- Warmer summers and warmer winters;
- Increased extreme weather events;
- Water scarcity / extended drought;
- Loss of marine biodiversity (especially on the Great Barrier Reef);
- Sea level rises;
- Increased disease outbreaks (including Dengue Virus); and
- Increased travel costs increases affecting longer-haul markets.

Within Australia the key areas identified by the IPCC at severe risk of impacts from climate change are those ecologically-rich sites, see Figure 3.

Figure 3: Australian Hotspots



The Australian Government's Department of Climate Change has identified that with 250,000 coastal buildings, Queensland is the most vulnerable to the impacts of climate change. In particular, the Wet Tropics and Southeast Queensland regions are identified as being 'hotspots' and likely to be significantly effected by rising sea levels, coastal flooding and erosion.

From a tourism perspective, Queensland's natural assets (e.g. the Great Barrier Reef, the Wet Tropics, etc) are a major selling point and generate a significant amount of tourism to the State. The Cairns tourism industry, for example, is heavily reliant on the reef and rainforest. Currently valued at \$1.2 billion per annum, tourism accounts for 16.5% of all jobs in the region. Should the water temperature increases leading to coral bleaching of the Great Barrier Reef and loss of species diversity in the Wet Tropics proceed unabated, the impact on the regional economy would be dramatic. The Federal Government's target to reduce the carbon pollution in the atmosphere by 60% by 2050 from 2000 levels does not secure the future of the Great Barrier Reef or the Wet Tropics, as a result some operators will need to adapt to new climate conditions.

Influence of the Travel and Tourism Industry on Climate Change

In 2005, tourism's contribution to global carbon emissions was estimated to be between 5% and 14% of the overall warming caused by human emissions of greenhouse gases (UNEP, 2008).

The Sustainable Tourism Cooperative Research Centre (STCRC), using the guidelines for Greenhouse Gas emissions measurement set out in the Kyoto Protocol, have measured the direct emissions of the Australian tourism industry. A total of 21.6M tonnes of carbon or 4% of Australia's total emissions are estimated to be produced by all direct tourism activities in Australia, placing tourism as Australia's seventh largest GHG emitting industry. The most significant contributor to this is transport (including aviation, private vehicles, cruise, etc) which accounts for 82% of all GHG emitted by the Australian tourism industry.

Queensland's Exposure to Climate Change Risk

A key selling point for Queensland as a tourism destination is its natural features - clean beaches, pristine rainforests and abundant wildlife. For this reason 'sustainability' is a central theme of the Queensland Tourism Strategy 2010.

The Garnaut Report, otherwise known as the Federal Government's Green Paper, identifies Queensland as the State most at risk to such impacts as follows:

- A rise in sea level causing coastal damage;
- An increase in the likelihood of extreme weather conditions (e.g. drought, flood, cyclones);
- Health impacts because of the spread of tropical-borne diseases, the increase of flooding and other such climate changes;
- Damage to ecosystems and species diversity;
- Damage to agricultural output and food supply; and
- An increase in the earth's surface temperature causing heat stress and damage.

The impacts of rising temperature alone could be extremely damaging:

<1°C	Vertebrates in the World Heritage Wet Tropics lose half their habitat.
>1°C	81% of the Great Barrier Reef bleached. Vertebrates in the World Heritage Wet Tropics lose 90% of their core habitat. Height of '100-year' storm surge at Cairns rises 22%, doubling the flooded area.
>2°C	97% of the Great Barrier Reef bleached. Tropical cyclone rainfall increases by 20-30%, as wind speed increases 5-10%.
>3°C	Distribution of Great Barrier Reef species shrinks by 95%. 65% of Reef species lost in Cairns region. Dengue fever transmission zone reaches Brisbane and possibly Sydney.
>4°C	Most Australian vertebrates lose 90-100% of their core habitat.

Source QTIC

The IPCC (2007) has identified some of the major natural tourist attractions in Queensland as vulnerable 'hotspots' to climate change, including the Great Barrier Reef and Eastern Queensland. Tropical North Queensland is by far the most threatened region in Australia. In addition to the Great Barrier Reef, the destination contains severely threatened rainforest areas; beaches in danger of inundation and increasing storm damage; threats to fishing; and bushfires and ultraviolet radiation.

Refer to the Risk Management factsheet for further information on the impacts of climate change and the tourism industry can respond.