

Climate change

What does the Outlook Report say about climate change and the Great Barrier Reef?

Future predictions of climate change dominate most aspects of the Great Barrier Reef's outlook.

Impacts from climate change have already been witnessed and all parts of the ecosystem are vulnerable to its increasing effects, with coral reef habitats the most vulnerable. Marine turtles and seabirds are also likely to be highly vulnerable.

Changes to the ecosystem because of climate change are likely to have serious implications for dependent industries and communities.

The average annual sea surface temperature on the Great Barrier Reef is likely to continue to rise over the coming century and could be as much as 1°C to 3°C warmer than the present average temperatures by 2100. In the last decade there have been two severe mass coral bleaching events resulting from prolonged elevated sea temperatures.

In addition, Great Barrier Reef waters are predicted to become more acidic with even relatively small increases in ocean acidity decreasing the capacity of corals to build skeletons and therefore create habitat for reef biodiversity in general.

Sea level on the Great Barrier Reef has already risen by approximately 3mm per year since 1991.

Changes in the climate also mean that weather events are likely to become more severe.

Almost all Great Barrier Reef species and habitats will be affected by climate change, some seriously.

The extent and persistence of the damage will depend to a large degree on the extent to which climate change is addressed worldwide and on the resilience of the ecosystem in the immediate future.

How effective is the management of climate change and the Great Barrier Reef?

In the Outlook Report, only those proactive and adaptive management measures undertaken specifically to protect and manage the Great Barrier Reef in relation to climate change were evaluated. The broader national and global initiatives to address climate change were not considered.

The management agencies responsible for the Great Barrier Reef are contributing significantly to the development of international best practice for managing climate change issues as they relate to coral reef ecosystems.

A comprehensive vulnerability assessment for the Great Barrier Reef provides good contextual information for management of climate change impacts. Key threats such as increasing sea temperatures, ocean acidification, sea level rise and increased severity of storm events are recognised.

Significant resources are being allocated by all levels of government and industry to assess threats and develop adaptation plans, and measures are in place for many aspects relating to the Great Barrier Reef. For example, the implementation of the \$8.9 million *Great Barrier Reef Climate Change Action Plan* is aimed at understanding the vulnerability of the Great Barrier Reef and helping to build resilience to climate change in the ecosystem and the communities and industries that depend on it.

The Outlook Report recognises that for all these plans and measures, the challenge remains to translate them into specific policies and measurable on-ground actions. For some, pilot programs are being undertaken at demonstration sites to capture lessons which can be applied elsewhere.

There is successful community engagement on climate change through programs such as Bleachwatch, Reef Guardian Schools and tourism industry input including via eco-certification. Partnerships to reduce carbon footprints and increase stewardship are being developed with the fishing industry.

The Outlook Report acknowledges that ultimately, if changes to the world's climate become too severe, no management actions will be able to climate-proof the Great Barrier Reef ecosystem.