



Wetlands and Climate Change

Climate change

Australia's climate has changed. Air and sea temperatures have warmed by around one degree Celsius in the last 100 years, heat waves and fire weather have increased and rainfall patterns have changed. Climate changes projections indicate that, in Australia, there are likely to be further increases in temperature, altered rainfall patterns, increased risk of intense rainfall and flash flooding in many regions, increased drought frequency and severity in some regions and rising sea levels ([CSIRO and Bureau of Meteorology – State of the Climate 2018](#)).

Vulnerability of wetlands to climate change

Wetlands are essential to life on earth, supporting more than 125,500 freshwater-dependent species. They are also among the ecosystems most vulnerable to climate change. Some wetlands, including coral reefs, mangroves, swamps and those in high latitude and alpine zones, are especially at risk. Inland, freshwater wetlands are likely to be affected by increased temperatures and changes to precipitation and more frequent or intense droughts, storms and floods. Wetlands that are highly modified or degraded may be even more sensitive and less resilient to climate change.

Top banner: Wetlands at Kakadu (Jenny Tomkins)

Wetlands for ecosystem-based adaptation

Wetlands can play an important role in our approach to climate change adaptation, through capturing and storing carbon to reduce atmospheric greenhouse gases, and providing resilience to hazards such as flooding, storm surge and coastal inundation.



Wetlands at Kakadu (Jenny Tomkins)

Wetlands absorb and store carbon

The role of wetlands in capturing and storing carbon is often underestimated. Wetlands are some of the largest carbon reservoirs on earth ([Ramsar Briefing Note – Wetland restoration for climate change resilience](#)).

Wetlands are estimated to store more than one-third of the world's terrestrial carbon. Their destruction often results in major releases of greenhouse gases to the atmosphere.

The UN General Assembly and the Ramsar Convention have noted the potential for coastal 'blue carbon' ecosystems (mangroves, seagrass and saltmarsh) to play a key role in climate change mitigation through carbon sequestration.



Mangroves, © copyright Allan Fox and Department of the Environment and Energy

Wetlands help reduce floods and relieve droughts

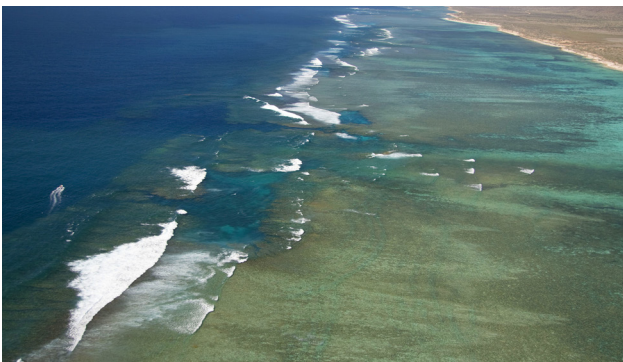
Inland wetlands, such as floodplains, rivers, lakes and swamps, function like sponges, absorbing and storing excess rainfall and reducing flood surges. During dry seasons in arid regions, wetlands provide refuges for wildlife and supply water for communities and stock.

Wetlands support biodiversity

Maintaining wetland networks and corridors will allow wetland-dependent plants and animals to adapt in response to changing climatic conditions by moving to new areas.

Wetlands buffer coastlines from extreme weather

More than 80 per cent of Australians live in the coastal zone. Coastal wetlands, such as mangroves, saltmarshes, seagrass beds and coral reefs act like shock absorbers. They reduce the intensity of waves and storm surges, shielding the coastline from flooding, and reducing property damage and loss of habitat for birds, fish, crustaceans and sea life such as turtles and dugongs. The roots of wetland plants also stabilise shorelines and streambanks and reduce erosion.



Ningaloo Reef, © copyright Tony Howard and Department of the Environment and Energy

Impacts of damage to wetlands

If wetlands are drained, burned or cleared, they become a carbon source, releasing into the atmosphere centuries of stored carbon. Carbon dioxide emissions from drained and burned peatlands equate to about 10 per cent of global annual fossil fuel emissions.

Conserving and restoring our wetlands

In the last 50 years, inland and coastal wetlands have declined by around 35 per cent worldwide, where data is available ([Global Wetland Outlook](#)). This is three times the rate for forests. Strategies that address climate change need to include the wise use of wetlands, along with restoration of damaged wetlands. Communities, businesses and governments need to work together to protect these amazing ecosystems which, in turn, will help us adapt to the impacts of climate change.



Aerial view over the Gold Coast, © copyright Department of the Environment and Energy

More information

[Climate Change in Australia - Climate Projections](#) – CSIRO and Bureau of Meteorology

[CoastAdapt](#) – Information delivery and decision-support tool

[Wetlands Australia](#) – February 2019 edition – articles on wetlands and climate change

[World Wetlands Day 2019](#) – Ramsar Convention resources on wetlands and climate change

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