Australian Government
Department of Climate Change, Energy, the Environment and Water

Australia State of the Environment 2021

The State of Australia's Environment

2021 State of the Environment Report

Access the full report at soe.dcceew.gov.au

What is the current state?

Overall, the state and trend of the environment of Australia is poor and deteriorating because of increasing pressures from climate change, habitat loss, invasive species, pollution and resource extraction.

Climate change is affecting all aspects of our environment. Land and ocean temperatures are increasing, driving changing rainfall patterns and extreme weather events that affect our soils, water and vegetation, and all the species that rely on them. The 2017–19 drought exceeded the previously worst-ever drought (the Federation Drought of 1895–1903). Extensive, catastrophic bushfires were followed by months of heavy and continuous rain. Yet Australians rank among the world's largest per-person emitters of greenhouse gases, contributing about 1.2% of global emissions.

Multiple pressures create cumulative impacts that amplify threats. We can expect our environment to undergo sudden, unpredictable and often irreversible change to new states, such as the transition of Tasmania's giant *Macrocystis* kelp forests to the shorter common kelp. Ecosystems are susceptible to collapse and our inability to manage pressures will continue to result in species extinctions.

Australia's heritage and many of our most valued and iconic ecosystems are at risk from climate change and environmental extremes. For example, the Great Barrier Reef has suffered repeated bleaching from unprecedented marine heatwaves. Some of the largest climate change effects are being seen in Antarctica where changes in sea ice extent, and land and sea temperatures are driving changes in Antarctic species and ecosystems. The Black Summer bushfires of 2019–20 burned more than 8 million hectares of native vegetation including large tracts of World Heritage properties and National Heritage places. An estimated 1 to 3 billion native animals were killed or displaced by the fires.

There are a range of heritage protections in place in Australia, but inadequate resourcing and governance is affecting all types of heritage. Indigenous heritage suffers from a lack of nationally consistent cultural heritage laws and standards, and limited inclusion of First Nations people in decision-making and management. Threats to Indigenous heritage from mining are substantial — there have been highly visible failures in protection over the past 5 years, such as the shocking destruction of the 46,000+ year-old Juukan Gorge rock shelters in the Pilbara, Western Australia.

Intense competition for land and water resources in Australia has resulted in continued declines in the amount and condition of natural capital — native vegetation, soil, wetlands, rivers and biodiversity — that Australians depend on for their food, water, wellbeing and livelihoods. Agriculture, forestry, mining and urban expansion are driving up land clearing rates, with over 6.1 million hectares of primary forest converted to other land uses since 1990. Native vegetation is increasingly being cleared and re-cleared without authorisation. Australia's soils deliver ecosystem services valued at around $930 billion per year. But because of changing land use in the past 20 years Australia ranks third in the world for soil organic carbon loss.

Low rainfall, high evaporation rates, river regulation (weirs, dams, etc.) and the abstraction of water for agriculture and other uses are having a profound effect on our river systems. River flows have decreased significantly over the past 15 years in southern Australia and catchments are mostly in poor condition. Native fish and bird populations have declined in the Murray–Darling Basin, home to 16 internationally significant Ramsar wetlands, 35 endangered species and 98 species of waterbirds. More than 4 million people depend on the basin for their everyday water needs but Indigenous peoples in the Murray–Darling Basin own only 0.17% of water access entitlements and licences, despite being nearly 10% of the population.

The clearing and grazing of native vegetation caused habitat loss, degradation and fragmentation, which led to biodiversity decline. Australia has lost more mammal species than any other continent over the past 200 years and continues to have one of the highest rates of species decline among countries in the Organisation for Economic Co-operation and Development (OECD). There were 1,385 plant species, 533 animal species and 88 ecological communities listed as threatened under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in June 2021, including 21% of all Australian mammals. Around 200 plant and animal species and 15 ecological communities have been added to lists since 2016. The trajectories of 21 priority species partially improved under the 2015 Threatened Species Strategy 5-year action plan, but the number of threatened species listed will continue to increase because of the 2019–20 bushfires.

Australia is burdened by thousands of non-native species introduced deliberately or by accident over the past 200 years and there are now more foreign plant species in Australia than there are native. The total annual cost of weeds to Australian grain, beef and wool industries alone is nearly $8.3 billion. Invasive species directly impact 82% of all Australian threatened species. Most mammal extinctions in Australia have been driven by predation from introduced species, especially the feral cat and European red fox.

Australia's marine waters are undergoing 'tropicalisation' as rising water temperatures drive warmer-water species further south. The waters along the south-east and south-west of Australia are global hotspots, with rates of warming above the global average. Our oceans absorb about 25% of the annual global carbon dioxide emissions and are becoming more acidic. This affects the ability of marine animals to build their calcium shells or skeletons.

Fast facts

Habitat loss and degradation are the main threat to species in Australia, with nearly 70% of Australian threatened taxa impacted and 60% of listed threatened species seriously affected. More than 100 Australian species listed under national, state or territory legislation are known to have become extinct since European colonisation.

Of the 7.7 million hectares of land habitat cleared between 2000 and 2017, 7.1 million hectares (93%) were not referred to the Australian Government for assessment under the EPBC Act.

Threats to Indigenous heritage from mining are substantial. For example, the Eastern Guruma peoples of the Pilbara estimate that 434 of their heritage sites have been destroyed while a further 285 are very close to current mining areas.

At least 19 Australian ecosystems have shown signs of collapse or near collapse – these ecosystems span the entire Australian continent and include Antarctic and sub-Antarctic ecosystems.

The interaction of water regulation and drought conditions resulted in devastating fish death events across the Murray–Darling Basin. With rainfall 70 to 80% below normal in 2018–19, more than 1 million fish died and bird populations declined because of low flow conditions, poor water quality and heatwave conditions in the Menindee Lakes system.

An International Union for Conservation of Nature (IUCN) 2020 assessment concluded that no World Heritage properties in Oceania have improved their conservation outlook since 2017, and 5 properties, all Australian, had deteriorated: the Great Barrier Reef, the Gondwana Rainforests of Australia, the Greater Blue Mountains Area, the Ningaloo Coast and Shark Bay (Gutharraguda).

Australia generated 75.8 million tonnes of solid waste in 2018–19. 2.5 million tonnes of plastic waste were generated in 2019–20 of which 84% went straight to landfill.

The global annual number of marine heatwave days has risen by 54% over the past century, with 8 of the 10 most extreme marine heatwaves ever recorded occurring after 2010.

11% of coastal dune vegetation has been lost since 2014, mainly because of the 2019–20 bushfires, land clearing and reduced rainfall.

The 2019–20 bushfire smoke is estimated to have resulted in 417 excess deaths, hospital admissions for 3,251 cardiovascular and respiratory problems, and 1,305 asthma presentations at emergency departments. This translates to a combined health cost of $1.95 billion in economic terms.

Conditions on the inner-central Great Barrier Reef are approaching a tipping point at which macroalgae (seaweed) will begin to replace coral. Plastics and debris have a high impact on marine life as an increasing amount of litter flows into oceans. Plastic particles have even been detected in the Antarctic food web, putting pressure on Antarctic ecosystems.

Our coasts encounter significant and sustained pressures from population, industry and climate that come from both sides – land and sea – narrowing the range of habitat for coastal biodiversity. Sea level rise and more frequent and severe extreme weather events cause erosion and inundation that damage buildings, infrastructure and shoreline ecosystems.

Australia's population and cities are expanding and so are the associated impacts that reduce liveability: urban heat, pollution and waste. As the population grows, it places increasing pressure on water and energy resources. Storms, fires, flood, dust and rising temperatures are impacting human health and wellbeing and damaging homes, infrastructure and biodiversity in and around our cities.

Clearing of land, climate change, and expanding mining and urban development are among the many environmental pressures that damage Country and Indigenous Australians' heritage, cultural connections and obligations to Country. First Nations people have cared for Country across generations, yet Indigenous knowledge and world view are rarely incorporated, valued or accessed by non-Indigenous environmental managers.

A recent independent review of the EPBC Act found that Australia's central environmental legislation and its implementation were not sufficient to protect our environmental values. One estimate of the cost of environmental restoration in Australia is approximately $10 billion annually — substantially more than current levels of investment. With decreasing health of Country, Indigenous people continue to seek a larger role in managing environmental recovery. Respectful use of Indigenous knowledge, recognition of Indigenous knowledge rights, and Indigenous and non-Indigenous knowledge systems working together will lead to positive change.

Why is it important?

All Australians rely on the environment. Healthy ecosystems and biodiversity are vital for human survival, quality of life and economic prosperity. Australia, its island territories, and surrounding ocean support 600,000 to 700,000 native species; many of these found nowhere else in the world. Much of Australia's natural and cultural heritage is globally significant. Indigenous Australians have a deep connection with the environment — they have lived on Country for tens of thousands of years and have a cultural responsibility to care for Country. The health of Country and people are inextricably linked.

Acknowledgement of Country — We acknowledge the Traditional Custodians of Australia and their continuing connection to land and sea, waters, environment and community. We pay our respects to the Traditional Custodians of the lands we live and work on, their culture, and their Elders past and present.

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