

NSW State of the Environment 2018

Summary of key findings



This is a summary of *New South Wales State of the Environment 2018 (SoE 2018)*, available for the first time as a purpose-built website at www.soe.epa.nsw.gov.au

SoE 2018 provides a snapshot of the status of the main environmental issues facing NSW. The report provides credible, scientifically based environmental information at a statewide level to assist those involved in environmental policy and decision-making and managing the state's natural resources.

The report is structured around six themes – Drivers, Human Settlement, Climate and Air, Land, Biodiversity, Water and Marine. Topics within each theme provide detailed information about the status and trends of specific environmental issues.

SoE 2018 identifies that many aspects of the environment are in good condition, including air quality and our coastal environment. Indications that economic growth is decoupling from energy use and CO₂ emissions are also positive. However, the report also identifies continued environmental challenges in a number of areas, including climate change, an increase in the number of threatened species, increasing transport emissions, and concerns about the health of our native vegetation and rivers.

The report has been prepared by the NSW Environment Protection Authority (EPA) in accordance with section 10 of the *Protection of the Environment Administration Act 1991*.

Drivers



The topics in this theme describe the key drivers of human-caused change to the environment – population growth and economic trends.

Population

The NSW population continues to grow and this growth is the key driver of human-caused changes to the environment in NSW.

Population growth and increasing urbanisation lead to greater demand for housing, energy, water, consumer products and transport services, as well as increased use of resources and the generation of emissions and waste.

- In the five years to June 2017 the NSW population increased by 550,000, an average annual growth rate of 1.5%
- As at June 2017, there were 7.9 million people living in NSW, (61% in Greater Sydney)
- By 2036 the NSW population is expected to be 9.9 million.

The challenge is to manage the growth in population without compromising the condition of the environment or liveability for the people of NSW.

Economic Activity and the Environment

The health of the NSW economy is strongly linked to the environment and the natural resources and ecosystem services it provides.

Since 1990, the NSW economy has sustained positive growth of about 2.6% per year. Over that time the economy has shifted from being primarily industry-based, to services-based, becoming less resource and emissions intensive.

- 70% of the NSW economy is now services-based
- CO₂ emissions per dollar of gross state product have fallen by about 60% since 1990.

Market-based approaches such as the recently-introduced container deposit scheme are helping to integrate the costs of environmental management into economic processes and decisionmaking.

Human Settlement



Urban areas are the most heavily modified and intensively used environments in NSW and present specific challenges for effective use of resources and managing pollution and waste.

The topics in this theme cover issues related to ensuring a healthy environment and enhancing living conditions for the NSW community.

Energy Consumption

A reliable and affordable energy supply underpins economic activity and our quality of life. But use of energy from non-renewable sources leads to greenhouse gas emissions and air pollution.

Final energy use peaked in 2010–11 and since then, there has been an overall decline in both the total and per person amount of final energy use.

- In the three years to June 2016, overall energy consumption decreased by 6%.
- Around 94% of energy used in NSW comes from non-renewable sources such as oil, coal and gas.
- Electricity generation from renewable sources has more than doubled, from 6% in 2007 to 16% in 2017.
- Transport accounts for almost 45% of final energy use, an increase of 6% between 2006 and 2016.

Due to the rapid acceleration in growth of renewable sources of electricity recently, the energy market is now in a transition phase as it shifts to cleaner sources of energy.

Transport

The transport sector is a major contributor to greenhouse gas emissions and air pollution.

As the NSW population grows, the demand for transport has increased. Total vehicle kilometres

travelled has gone up but levels per person have dropped.

- In 2015–16 transport accounted for almost 21% of the state's greenhouse gas emissions, an increase of 12% since 2008.
- In 2016-17, 69% of weekday trips by Sydney residents and over 80% of trips by Hunter and Illawarra residents were by private motor vehicle.
- Around 12% of weekday trips were by public transport.

Initiatives encouraging travel by public transport reduce the dependency on private motor vehicles, while a predicted increase in the use of electric cars would also help to reduce transport emissions.

Waste and Recycling

Waste is a by-product of our economy's production and consumption processes. It needs to be managed effectively to prevent risks to public health, environmental contamination and the loss of valuable resources.

Since peaking in 2010–11 at over 17 million tonnes, total waste generated in NSW fell to 16.5 million tonnes in 2014–15 and continues to fall. The amount diverted for recycling has increased slightly.

- In 2014–15, 63% of waste was diverted from landfill for recycling.
- In 2017–18, the volume of litter decreased by 37% from 2013–14 levels.

The \$802 million *Waste Less, Recycle More* program is improving waste management by:

- increasing recycling by business
- better managing problem wastes
- tackling illegal dumping.

The *Return and Earn* container deposit scheme, has made a significant contribution in reducing drink container litter.

Contaminated Sites

Exposure to contaminated sites may affect the health of people, animals or plants. Contamination makes the land unsuitable for most uses.

Sites contaminated by potentially harmful substances continue to be notified at a steady rate, but the total number of sites being regulated has decreased slightly.

In the 20 years to 2017, 346 significantly contaminated sites were regulated by the EPA.

Between January 2015 and December 2017:

- 111 new sites were notified
- almost 900 potentially contaminated sites were assessed
- 63% of newly regulated sites were service stations or other petroleum industry sites.

Improvements to contaminated land management are being achieved through the regulation of underground petroleum storage systems and by establishing preventative programs in high risk industries.

Urban Water Supply

A high quality and secure water supply is essential for community health and economic growth. Urban areas use about 18% of all water consumed in NSW.

Overall demand for water decreased during the Millennium Drought but has slowly increased since then in line with population growth. However, per capita demand has dropped due to greater efficiencies of use. Urban water quality is generally good.

NSW Water utilities:

- achieved 100% compliance with drinking water guidelines over the past three years
- recovered 28.2 gigalitres of urban water by recycling in 2015–16.

Recycling of supplied water and the use of the water desalination plant are strategies that can curb growth in urban water demand.

Climate and Air



The substances that we release into the atmosphere affect the quality of the air we breathe, or can build up over time leading to climate change.

The topics in this theme describe air quality in NSW and the effects of carbon emissions on our climate, as well the current and potential environmental impacts of climate change.

Climate Change

Climate change poses a major threat to the well-being and lifestyle of the people of NSW and to most aspects of the environment.

The climate of NSW is changing due to global warming, with higher temperatures, increased rainfall variability and more extreme weather events. The effects of climate change are expected to become more pronounced and increase in severity as warming continues over the next century.

Changes in climate that have been observed to date include:

- Average temperatures for the past decade have been 0.99°C above 1910–1939 levels
- Sea surface temperatures have warmed by 0.5–0.8°C since the late 20th century
- The rate of sea level rise has almost doubled since 1993, with an average annual increase of 3.2 mm per year.

Over the next century it is expected that conditions will worsen for the survival of many species and ecosystems and the productivity of some agricultural systems.

Counteracting the effects of climate change will depend on concerted action globally to reduce greenhouse gas emissions. An aspirational target for NSW to achieve net zero emissions by 2050 is set out in the NSW Climate Change Policy Framework.

Greenhouse Gas Emissions

Energy produced from non-renewable resources leads to emissions of greenhouse gases. These are building up in the atmosphere and are the primary cause of climate change.

Greenhouse gas emissions in NSW peaked in 2007. Emissions have declined across most economic sectors except transport, which has undergone almost uninterrupted growth.

In 2016, emissions were:

- 18.7% lower than 2005 levels
- about 17 tonnes CO₂ per capita – below the national average of 21.8 tonnes but higher than the 2014 global average of 6.6 tonnes.

Reductions in greenhouse gas emissions have been achieved through:

- more energy generation from renewable sources
- use of gas-fired power stations
- less land clearing
- reforestation by the agriculture and land use sector, which now absorbs more carbon dioxide than it releases.

Air Quality

Good air quality is essential for a clean living environment and the health of the NSW population.

NSW air quality consistently complies with national air quality standards for carbon monoxide, nitrogen dioxide, lead and sulfur dioxide. However, standards for fine particle pollution and ozone are occasionally exceeded.

Between 2015 and 2017:

- particle concentrations exceeded national standards on up to 20 days a year in Sydney, and 16 in regional areas
- concentrations of ground-level ozone, a key component of photochemical smog, exceeded national standards in Sydney on up to nine days a year.

In 2016 national air quality standards were strengthened. The new national standards for PM_{2.5} particles are the most health protective fine particle standards in the world.

Programs to further improve air quality in NSW are targeted to locations where they are most needed, including:

- the Dust Stop program, which reduces dust from coal mines
- the Wood Smoke Reduction Program to reduce smoke from domestic wood heaters.

Land



The condition of our natural environment is largely dependent on how our land is used and managed.

The topics in this theme describe the condition of our land and its ability to provide ecosystem services and suitable habitat for native species.

Soil Condition

Healthy soils support natural ecosystems, provide essential ecosystem services and enable our agricultural industries to prosper.

Soil resources in NSW are generally in a moderate condition, despite a broad decline since European settlement.

- Organic carbon and salinity are stable
- Impacts of hillslope and wind erosion are reducing
- Increasing acidification of agricultural soils is currently the main contributor to declines in soil condition in some parts of the state.

New conservation farming practices which involve less clearing and cultivation are helping to control erosion and maintain soil condition.

Native Vegetation

Maintaining native vegetation in good condition is critical to the survival of the species and ecosystems that depend on it for habitat.

The area of NSW that has not been cleared and has native vegetation cover is 61%. At the time of publication, the latest reported rate of clearing of woody native vegetation was 14,700 ha/year (in 2014–2015).

- About 15% of native vegetation is in close to natural condition

- The rest is in variable condition but has deteriorated, largely due to different land uses and land management practices.

In NSW, land clearing is the main threat to native vegetation. Other pressures include fragmentation, invasive species and climate change. These are likely to continue for the foreseeable future.

The Biodiversity Offsets Scheme encourages landholders to protect and conserve biodiversity and vegetation habitat on private land.

Protected Areas and Conservation

Protected areas of land in natural or close-to-natural condition are the cornerstone of nature conservation efforts in NSW.

The public reserve system covers about 7.59 million hectares or around 9.5% of the state. The adequacy of protected areas in NSW is improving but some bioregions and vegetation classes are still under-represented.

Since 2015:

- the area of land in national parks and nature reserves has increased by 31,900 hectares
- the number of parks on land jointly managed or owned by Aboriginal people has increased.

Extra conservation on both Crown and private land supplements the protected area network and provides vegetation corridors linking larger public reserves.

The Biodiversity Conservation Trust has been set up to encourage landholders to voluntarily enter into private land conservation agreements to conserve biodiversity.

Biodiversity



Changes to the state's natural environment have affected the richness and diversity of species and ecosystems and their ability to survive.

The topics in this theme describe the condition of the native species and ecosystems of NSW and the effects of introduced species.

Threatened Species

Efforts to protect species and ecosystems are focused on threatened species as these are at the greatest risk of extinction.

The number of species considered at risk of extinction continues to rise. Under NSW legislation there are currently 1,025 species and 112 ecological communities listed as threatened.

- Since 2015, the number of threatened species listings has increased by 3%
- 57 populations are listed as threatened
- 77 listed species are presumed extinct

The survival of threatened species is impacted by 46 listed key threatening processes. The main threats are the clearing and disturbance of native vegetation and invasive pests and weeds.

As the effects of climate change become more pronounced these will increasingly impact on species' capacity to adapt and survive.

The NSW Government's Saving our Species program prioritises actions to maximise the number of land-based threatened species through relevant actions identified in one of six management streams.

Native Fauna

The condition of native fauna populations provides an indication of the health and biodiversity of ecosystems.

Reductions to the range or abundance of many native species indicate a pattern of overall decline in biodiversity over the longer term.

However, many species less susceptible to pressures and disturbance have maintained their distributions, while a small number of adaptable species have flourished.

- 64% of native land-based vertebrate species (including reptiles, mammals and birds) are not listed as being threatened.
- 64% of native mammals for which there was sufficient data have experienced long-term declines in range

The continuing overall decline in native fauna diversity is due to the cumulative impact of

vegetation clearing and fragmentation, habitat degradation and invasive species.

Key measures to address the decline in biodiversity are:

- conservation of native species in the public reserve system
- encouraging the protection of biodiversity on private land
- protecting those species listed as threatened through the Saving our Species program.

Invasive Species

Invasive species displace native species through predation, or by out-competing them. Cats and foxes, in particular, are responsible for the extinction of many small to medium sized mammals in NSW.

Invasive species, including pest animals, weeds and pathogens, are widespread across the state and have significant impacts on native species, ecosystems and agriculture. Many invasive species are listed as key threatening processes in NSW legislation.

- Weeds and pest animals threaten over 70% of threatened species and endangered ecological communities in NSW
- Introduced carp dominate freshwater fish communities in most of the Murray-Darling basin
- Weeds cost the NSW economy \$1.8 billion each year in lost agricultural production and management costs.

Once an invasive species becomes established, eradication is rarely practical. As effective control is also difficult, these species are a significant and ongoing threat to biodiversity and ecosystems.

Approaches to excluding, eradicating or managing invasive species are set out in the NSW Invasive Species Plan 2018–2021.

Water and marine



Water is a valuable resource. Human uses of it need to be balanced with maintaining our natural aquatic environments in a healthy condition.

The topics in this theme describe how water resources are used in NSW and the condition of freshwater and marine ecosystems.

Water Resources

Following high flows in most rivers during 2016–17, NSW has entered a significantly drier phase. Demand for the state's water resources remains high and is being managed through water sharing plans.

Water extraction and flow regulation, which alter river flows, continue to put pressure on the health of inland river systems.

Water sharing plans aim to balance equity of access to water for users, while retaining enough water for ecosystem health.

The release of environmental water is important for maintaining or improving habitat condition and stimulating breeding events.

- Since 2015, 58 water sharing plans have been in operation, or finalised, for all water sources in NSW
- In 2016–17, cumulative holdings of environmental water totalled around 2,482 gigalitres
- During 2016–17, 1,420 gigalitres of environmental water were delivered to environmental assets in inland rivers.

River Health

Healthy river ecosystems comprise rivers, their riparian zones, floodplains and wetlands. They are vital to aquatic and terrestrial biodiversity, but also to support human economic and recreational activities.

The overall condition of rivers across NSW is moderate. Aquatic ecosystems in the major rivers of the Murray-Darling Basin are generally in poorer condition than those in coastal rivers, as coastal rivers are less affected by water extraction and flow regulation.

- Under the River Condition Index 38 out of 40 NSW river valleys are rated as being in 'moderate' or better condition
- Fish assemblages are rated as 'poor' in 80% of river valleys but have improved slightly since 2012–14.

The widespread distribution of introduced carp has had a significant impact on the health of fish communities.

To protect aquatic ecosystems:

- releases of environmental water are targeted to improve environmental flows and habitat quality
- fishways and remediation work have re-opened thousands of kilometres of river habitat to fish.

Wetlands

Wetland ecosystems support high levels of biodiversity. They provide habitat for a wide range of animals including waterbirds, fish and frogs but are under pressure due to drainage and water diversion.

From 2017, a return to drier weather conditions has had detrimental impacts on wetland areas and waterbird breeding. This has been alleviated in those inland wetland communities receiving environmental water.

In 2017 there were:

- 111,000 hectares of surveyed wetland, below the long-term median of 235,000 hectares
- 239,000 surveyed waterbirds, below the long-term median of 294,000.

Wetland condition is affected by water availability, changing river and tidal flows and surrounding land uses.

Releases of environmental water are targeted to high-value areas of wetlands, enabling vegetation condition and waterbird diversity to be maintained. These areas act as refuges for water-dependent species during dry periods.

Groundwater

Groundwater is widely used in agriculture and industry. It is also the primary source of water in many NSW regional communities, for drinking, domestic and stock use.

Overall extractions from all NSW metered groundwater sources are within the long-term average limits for extraction.

In the two years to June 2017 groundwater extraction decreased, reflecting a drop in demand due to seasonal conditions.

Extraction from the major alluvial systems fluctuates around levels close to the limits. However, the overall level of groundwater extracted from all metered sources in NSW is much lower than the sustainable limit.

Water sharing plans for each water source now ensure that groundwater is managed sustainably within the extraction limits set by the plans.

Coastal, Estuarine and Marine Ecosystems

The increasing popularity of coastal lifestyles is placing marine and coastal environments under higher levels of stress.

Water quality and ecosystem health in the marine environment is generally good. Most coastal environments are in good condition, while the condition of NSW estuaries tends to be more variable and not as good overall.

Recreational water quality is rated as 'very good' or 'good' at:

- 84% of NSW beaches
- 66% of coastal lakes and estuaries.

Under NSW legislation, 45 marine species or populations are currently listed as threatened, including 21 marine seabird species and seven marine mammal species.

Land use intensification, resource-use activities and climate change pose the greatest threats to the coastal and marine environment.

The NSW Marine Estate and Coastal management frameworks and strategies aim to protect marine and coastal environments.

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Every effort has been made to ensure that the information in this document is accurate at the time of publication. However, as appropriate, readers should obtain independent advice before making any decision based on this information.

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