



factsheet



Climate Change – potential impacts and costs

Victoria

Snapshot

Victoria is Australia's smallest yet most densely populated and urbanised mainland state. It is the second most populous Australian state with approximately 5,567,000 people. Melbourne is Victoria's largest city, home to more than 4 million people.

Victoria contains many diverse environmental regions, ranging from the wet, temperate climate of Gippsland in the south-east to the snow-covered alpine areas in the north-east. There are also extensive semi-arid plains to the west and north-west of the state.

The following information highlights some of the potential impacts and costs to the state's industries, infrastructure, environment and people from climate change.

Coastal Zone

Climate change will lead to sea level rise which will impact on coastal settlements, infrastructure and ecosystems. Between 31,000 and 48,000 residential buildings, with a current value of between \$11 billion and \$8 billion may be at risk of inundation from a sea level rise of 1.1 metres. A 1.1 metre sea level rise will also put up to 3,500 km of Victoria's roads, up to 125 km of railways and up to 2000 commercial buildings at risk. These assets have an estimated value of up to \$9.8 billion, \$500 million and \$12 billion respectively.

Global sea levels increased by 1.7 mm per year over the 20th century. Over the past 15 years, this trend has increased to approximately 3.2 mm per year. This rate varies significantly around Australia. Since the early 1990s, south-eastern Australia has experienced increases of between 1.3 and 2.8 mm per year.

In 2009, the Australian Government produced the report, *Climate Change Risks to Australia's Coasts*, followed

in 2011 by an update to this report entitled *Climate Change Risks to Coastal Buildings and Infrastructure*. For a visualisation of the potential sea level rise, the Department has also produced a series of maps available at: www.ozcoasts.org.au.

Water Supply

Much of Victoria lies within the Murray Darling Basin region where climate change is likely to have serious impacts on water resources. Projections indicate a 13 per cent reduction in average surface water availability in the south of the Murray Darling Basin as a median outcome by 2030. The reduction would be greatest in the south-east where the majority of runoff is generated and where the impacts of climate change are expected to be greatest.

In Melbourne the average long-term stream flow into water supply catchments could be reduced by up to 11 per cent by 2020, and as much as 35 per cent by 2050.

Extreme Events

The average annual number of days above 35°C is likely to increase from 9 days currently experienced in Melbourne to up to 26 days by 2070 without global action to reduce emissions. In Mildura, days above 35°C may increase from 32 days currently to 76 days under the same scenario.

Parts of Victoria are likely to experience increased bushfire risk due to higher temperatures and drier conditions. For example, in Bendigo the number of days experiencing high or extreme fire weather is predicted to increase from 18 days to 30 days annually by 2050, and Mildura is expected to face up to 107 days of very high or extreme fire risk by 2050, up from 80 days currently experienced.



Human Health

As the number of very hot days (above 35°C) increases, more people may suffer heat-related illnesses and death, with the elderly particularly vulnerable. Currently, 289 people aged 65 and over die annually in Melbourne from heat-related deaths. This could jump to between 566 and 604 a year by 2020, and between 980 to 1318 by 2050. The population of Victoria is more susceptible to cold-related deaths than heat-related deaths. As such, the total number of temperature-related deaths are projected to be up to 1,164 in 2100 with no mitigation, compared to 1,966 in a world with no human-induced climate change.

During the January 2009 heatwave there were 374 more deaths (an increase of 62 per cent) than would be expected based on the average over the previous five years, with the greatest number of deaths occurring in people 75 years or older.

Natural Environments

Victoria's unique alpine ecosystems host a variety of plant and animal species, many of which are endangered. Species such as the Mountain Pygmy Possum that occupy habitat at the highest elevations and in the coldest environments will have nowhere to retreat as the climate warms. A 1°C temperature rise could dramatically decrease the entire climatic habitat of this small mammal.

A reduced snow cover of 10 to 40 per cent relative to 1990 by 2020 is projected, which would have significant consequences for alpine tourism in Victoria. Alpine resorts are economic drivers for surrounding communities and a reduced ski season and diminished snow cover is likely to have negative economic impacts for the Australian ski industry.

Under an extreme emissions scenario with increased warming and decreased rainfall, the length of the snow season may decrease by up to 96 per cent by 2050, with a dramatic reduction in snow depth. Snow cover at Mt Hotham (where the highest elevation is 1882 metres) could reduce from 129 days currently down to between 21 and 114 days by 2050.

The Little Penguins found on Phillip Island have been shown to be particularly vulnerable to fire over the past

few years. In coastal regions, misty rain or fog following long spells of hot, dry and dusty weather can result in the ignition of power pole cross arms, due to a build-up of salt and dust on the insulators. The red-hot salt crust can fall from the pole and ignite vegetation at its base. In recent years a number of such fires have occurred on Phillip Island, resulting in death or injury of a large number of penguins. Increased occurrence of hot, dry and dusty weather is projected for the future and may result in increased fire-related risk of Little Penguin death and injury on Phillip Island.

Agriculture

Potential changes in climate may reduce productivity and output of Victoria's agricultural industries in the medium to long term.

While wheat producers may benefit from carbon dioxide fertilisation with modest levels of warming, yields are likely to decline under more extreme warming scenarios. For example, in the region of Birchip, yields may drop by more than 20 per cent by 2100 in the absence of mitigation.

ABARE modelling (2007) estimates the following declines in agricultural production for Victoria compared to a 'business as usual' scenario.

	Approximate decline in production by 2030 (%)	Approximate decline in production by 2050 (%)
Wheat	8	13
Beef	9.6	19
Sheep	8.5	14
Dairy	9.5	18

Adaptation

Given the state's high vulnerability to projected climate change, it is important that appropriate actions are taken by government, businesses, communities and individuals to ensure effective adaptation is possible in a changing environment.

More information

For details on what the Australian Government is doing to prepare for the impacts of climate change, visit www.climatechange.gov.au

See what the Victorian Government is doing at: www.dpc.vic.gov.au

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