



A Changing Climate

Conclusive evidence shows that our climate is changing. Climate change has the potential to affect the way New Zealanders live, work and play in future. It is expected to affect the frequency and severity of natural hazards (floods, storms and drought), and the costs of these events.

HOW WILL CLIMATE CHANGE AFFECT NEW ZEALAND?

While climate change impacts are expected to vary across the country, on average New Zealand can expect the following:

- **Sea level rise.** By 2100, a 30-50 cm rise is most likely. This will exacerbate coastal erosion, coastal flooding and saltwater intrusion into freshwater. Sea levels around New Zealand have already shown a 14-17cm rise over the 20th Century.
- **Temperatures** are likely to continue to increase over the whole country. Average temperatures are projected to increase about 1°C by the 2030's and about 2-3°C by the 2080's. New Zealand temperatures have already increased by 0.7°C over the past 100 years.
- More **rain** is likely to fall in the west of the country and less in the east.
- **Westerly winds** are likely to become more prevalent.

WHAT ABOUT NATURAL CLIMATE VARIATION?

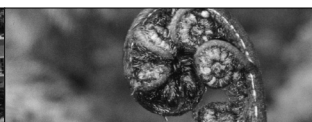
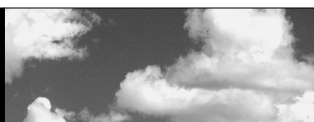
Natural weather cycles (such as El Niño, which brings dry summers and autumns) will continue to influence the climate from year to year and decade to decade. Climate change is likely to amplify this natural variation.

WHAT WILL THESE CHANGES MEAN?

Increased greenhouse gas concentrations have already started to affect the climate in ways that will take time to reverse. Even if significant global action is taken now to reduce greenhouse gas concentrations, some degree of climate change is inevitable in our lifetime, and that of our children.

A changing climate will create both **opportunities** and **risks** for New Zealand:

- Warmer winters are expected to reduce electricity demand, increase rainfall in the mountains and reduce snow cover, thereby increasing hydroelectric lake levels and minimising electricity supply pressures.
- Agricultural and forestry productivity is expected to increase in some areas, as will the potential for commercialisation of new crops. However, increased drought and other extreme weather events are expected to cost the sector, particularly in areas already affected by water shortages or flooding. Higher temperatures could also cause problems for crops such as kiwifruit which require cold winters for fruit development. There would be costs associated with changing land-use activities to suit a new climate.
- Agricultural and forestry pests and diseases could spread more easily in warmer conditions. Forest fires are also likely to become an increasing risk in some areas.
- Communities are likely to enjoy the health benefits of warmer winters (and lower heating costs), but hotter summers will bring increased risks of heat stress. Sub-tropical diseases may also become a problem if carrier insects – such as mosquitoes carrying the Ross River Virus – become established as the climate warms.
- Snowlines and glaciers are expected to retreat, thereby changing water flows in associated rivers, particularly in the South Island.
- Heavy rainfall is likely to put pressure on drainage and stormwater systems. Erosion from more frequent flooding may increase road maintenance costs, but fewer snowfalls during winter would save road maintenance costs in some areas.
- Biodiversity issues may be exacerbated as some species fail to adjust to a changing climate/habitat.



LOCAL GOVERNMENT AND CLIMATE CHANGE

Recent amendments to the Resource Management Act (March 2004) require councils to take into account the effects of climate change.

It is recommended that councils do so when land-use planning, planning for natural hazards, and designing new infrastructure and assets with a lifetime of more than 30 years.

Of particular importance are:

- stormwater system capacity and design
- water use rights and irrigation scheme placement and design
- development decisions relating to areas prone to river and sea flooding
- decisions relating to housing and infrastructure in areas prone to coastal erosion
- natural hazards mitigation structures (eg, stopbanks).

Councils already consider climate variability and the likelihood of extreme weather events as they develop plans, mitigate risks and provide services to the community. Climate change is best considered as an integral part of these activities given that it affects the range of weather extremes and climate variations to be managed by council.

THE CLIMATE CHANGE OFFICE

Part of the Ministry for the Environment, the Climate Change Office develops policy and works across all levels of government and with the private sector on climate change initiatives.

A range of information materials has been developed by the Office to help local authorities and communities understand and plan for climate change effects.

Visit www.climatechange.govt.nz/resources/local-govt/index.html for more details.

WANT TO KNOW MORE?

Contact the Ministry for the Environment by phoning (04) 917 7400, emailing information@mfe.govt.nz, writing to PO Box 10362, Wellington, or see our websites: www.mfe.govt.nz or www.climatechange.govt.nz