



Office of the Prime Minister's Chief Science Advisor  
Kaitohutohu Mātanga Pūtaiao Matua ki te Pirimia

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INFORMATION SHEET: Hot topic – Climate Change

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<b>Notes:</b> ‘Hot topic’ documents provide an overview of the topic, with links to reputable sources for further information. They are periodically updated. The most recent update is archived here.				



## Climate change

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Human activities have warmed the earth by more than 1°C above pre-industrial levels. Already, the impacts are being felt. For example:

- Severe heat waves and droughts are becoming more common
- The intensity of storms, snow events, and rain events is increasing
- Sea levels are rising, threatening coastal settlements, exacerbating the effects of flooding, and contaminating freshwater sources
- Arctic ice cover is shrinking, impacting ocean circulation and salinity and disrupting local ecosystems
- The distribution of tropical cyclones is changing, and with further warming they are expected to become more intense
- Warming seas are killing coral reefs
- Animals and plants are threatened by the changing climate, for example due to loss of habitable range

The [Intergovernmental Panel on Climate Change](#)<sup>1</sup> is the United Nations body for assessing climate change science. The panel produces reports that assess what is known about climate change and its impacts, producing synthesis reports and special reports on specific aspects of climate change.

The previous Chief Science Advisor, Sir Peter Gluckman, produced a [report on climate change in Aotearoa New Zealand](#).<sup>2</sup> The report looks at how the changing climate will impact temperatures, wind patterns, precipitation, and ocean chemistry, and what this means for New Zealand.

### The Paris Agreement and COP26

The United Nations Framework Convention on Climate Change (UNFCCC), agreed in 1992 and now enjoying near-universal membership, is the main international treaty on climate change. Every year, the 197 member countries meet at what is known as the Conference of the Parties, or COP. At COP21 in 2015, the [Paris Agreement](#)<sup>3</sup> was formed, with nearly all countries agreeing to hold “the increase in the global average temperature to well below 2°C above pre-industrial levels,” but ideally to 1.5°C above pre-industrial levels to “significantly reduce the risks and impacts of climate change.”

The most recent UNFCCC meeting, COP26, was held in Glasgow in November 2021, and was described by Minister for Climate Change, the Hon James Shaw, as “probably the most important [COP] since the Paris Agreement.” Our Office [reflected on the importance of the meeting](#)<sup>4</sup> in the lead up to COP, and the Prime Minister’s Chief Science Advisor joined her counterparts from around the world in [signing a statement](#)<sup>5</sup> ahead of COP26 laying out a clear vision for what is needed to meet the ambitious Paris Agreement.

### Climate legislation and policy in Aotearoa New Zealand

In 2019, an amendment to the Climate Change Response Act 2002 was passed. According to the [Ministry for the Environment](#),<sup>6</sup> “the Climate Change Response (Zero Carbon) Amendment Act 2019 provides a framework by which New Zealand can develop and implement clear and stable climate change policies that:

- contribute to the global effort under the Paris Agreement to limit the global average temperature increase to 1.5° Celsius above pre-industrial levels
- allow New Zealand to prepare for, and adapt to, the effects of climate change.

The changes do four key things:

- set a new domestic greenhouse gas emissions reduction target for New Zealand to:
  - reduce net emissions of all greenhouse gases (except biogenic methane) to zero by 2050
  - reduce emissions of biogenic methane to 24–47 per cent below 2017 levels by 2050, including to 10 per cent below 2017 levels by 2030
- establish a system of emissions budgets to act as stepping stones towards the long-term target
- require the Government to develop and implement policies for climate change adaptation and mitigation
- establish a new, independent [Climate Change Commission](#)<sup>7</sup> to provide expert advice and monitoring to help keep successive governments on track to meeting long-term goals.”

In addition to domestic targets, it is widely recognised at the international level that developed countries, who in general have played a greater historic role in greenhouse gas emissions, have an obligation to support developing countries in their climate mitigation and adaptation efforts. In October 2021, [New Zealand announced an increase to its climate aid contribution](#),<sup>8</sup> committing \$1.3 billion over four years to support countries most vulnerable to the effects of climate change, with at least half of the funding slated to go to the Pacific, where Minister Shaw says “the impacts of climate change that scientists have been warning us about for decades are not academic, or a distance threat; they are happening right now.”

### Read more

- [Productivity Commission inquiry into low emissions economies](#)<sup>9</sup>
- [Royal Society Te Apārangi climate change resources](#)<sup>10</sup>
- [Parliamentary Commissioner for the Environment](#)<sup>11</sup> – in particular, see the Commissioner’s [2017 Climate Change report](#)<sup>12</sup>
- [Science Learning Hub](#)<sup>13</sup>
- [Climate Action Tracker](#)<sup>14</sup>

## Endnotes

- <sup>1</sup> The Intergovernmental Panel on Climate Change website, accessed on 23 February 2022 <https://www.ipcc.ch/>
- <sup>2</sup> OPMCSA report – New Zealand’s changing climate and oceans: The impact of human activity and implications for the future (2013), accessed on 23 February 2022 <https://cpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/f/688/files/2020/02/New-Zealands-Changing-Climate-and-Oceans-report.pdf>
- <sup>3</sup> Paris Agreement (2015), accessed on 23 February 2022 [https://unfccc.int/sites/default/files/english\\_paris\\_agreement.pdf](https://unfccc.int/sites/default/files/english_paris_agreement.pdf)
- <sup>4</sup> OPMCSA webpage – Chief Science Advisors release statement ahead of COP26, accessed on 23 February 2022 <https://www.pmcsa.ac.nz/2021/10/28/chief-science-advisors-release-statement-ahead-of-cop26/>
- <sup>5</sup> Statement by International Senior Science Advisors Ahead of COP26 (2021), accessed on 23 February 2022 [https://cpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/f/688/files/2021/10/International-CSA-statement-ENGLISH\\_sigs.pdf](https://cpb-ap-se2.wpmucdn.com/blogs.auckland.ac.nz/dist/f/688/files/2021/10/International-CSA-statement-ENGLISH_sigs.pdf)
- <sup>6</sup> Ministry for the Environment webpage – Climate Change Response (Zero Carbon) Amendment Act 2019, accessed on 23 February 2022 <https://environment.govt.nz/acts-and-regulations/acts/climate-change-response-amendment-act-2019/>
- <sup>7</sup> Climate change Commission website, accessed on 23 February 2022 <https://www.climatecommission.govt.nz/>
- <sup>8</sup> Beehive press release – New Zealand increases climate aid contribution (2021), accessed on 22 February 2022 <https://www.beehive.govt.nz/release/new-zealand-increases-climate-aid-contribution>
- <sup>9</sup> Productivity Commission inquiry – Low-emissions economy (2018), accessed on 22 February 2022 <https://www.productivity.govt.nz/inquiries/lowemissions/>
- <sup>10</sup> Royal Society Te Apārangi webpage – Climate change and New Zealand, accessed on 22 February 2022 <https://www.royalsociety.org.nz/major-issues-and-projects/climate-change-and-new-zealand>
- <sup>11</sup> Parliamentary Commissioner for the Environment website, accessed on 23 February 2022 <https://www.pce.parliament.nz/>
- <sup>12</sup> Parliamentary Commissioner for the Environment publication – Stepping stones to Paris and beyond: Climate change, progress, and predictability (2017), accessed on 23 February 2022 <https://www.pce.parliament.nz/publications/stepping-stones-to-paris-and-beyond-climate-change-progress-and-predictability>
- <sup>13</sup> Science Learning Hub webpage – Climate change resources: planning pathways, accessed on 23 February 2022 <https://www.sciencelearn.org.nz/resources/2639-climate-change-resources-planning-pathways>
- <sup>14</sup> Climate Action Tracker webpage, accessed on 23 February 2022 <https://climateactiontracker.org/>