New zealand climate change

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More than half (53%) of New Zealand"s gross greenhouse gas emissions are from agriculture, mainly methane from sheep and cow belches.[6][7] Between 1990 and 2022, New Zealand"s gross emissions (excluding removals from land use and forestry) increased by 14%. When the uptake of carbon dioxide by forests (sequestration) is taken into account, net emissions (including carbon removals from land use and forestry) increased by 33% since 1990.[6]

Climate change is being responded to in a variety of ways by civil society and the New Zealand Government. This includes participation in international treaties and in social and political debates related to climate change. New Zealand has an emissions trading scheme, and in 2019 the government introduced the Climate Change Response (Zero Carbon) Amendment Bill which created a Climate Change Commission responsible for advising government on policies and emissions budgets.[8][9]

New Zealand has a relatively unique emissions profile. In 2022, agriculture contributed 53% of total gross emissions; energy (including transport), 37%; industry, 6%; waste, 4%.[6] Based on the latest available Inventory data for 2022, New Zealand"s gross emissions per capita were above the average for developed countries.[6] In other Kyoto Protocol Annex 1 countries, agriculture typically contributes about 12% of total emissions.[13]

Between 1990 and 2022, New Zealand emissions of carbon dioxide (CO2) increased by 24%; methane (CH4) by 2%; and nitrous oxide (N2O) by 35%. The total of all combined fluorinated gases have increased by 87%.[6]

The New Zealand Emissions Trading Scheme, which came into effect in 2010, was intended to provide a mechanism which encouraged different sectors of the economy to reduce their greenhouse gas emissions. It may have slowed the increase somewhat. Between 2007 and 2017 total national emissions decreased 0.9%, reflecting growth in renewable energy generation.[14] However, between 2016 and 2017, New Zealand"s gross emissions jumped 2.2%, bringing the total (or gross) increase in greenhouse gas emissions between 1990 and 2017 to 23.1%.[15]

In 2018, on a per capita basis, New Zealand was the 21st biggest contributor to global emissions in the world and fifth highest in the OECD.[16]

Modelled wind directions indicated that air flows were originating from 55 degrees south. The Baring Head data shows about the same overall rate of increase in CO2 as the measurements from the Mauna Loa Observatory, but with a smaller seasonal variation. The rate of increase in 2005 was 2.5 parts per million per year.[21] The Baring Head record is the longest continuous record of atmospheric CO2 in the Southern Hemisphere and it featured in the IPCC Fourth Assessment Report: Climate Change 2007 in

conjunction with the better-known Mauna Loa record.[22]

According to estimates from the International Energy Association, New Zealand"s per capita carbon dioxide emissions roughly doubled from 1970 to 2000 and then exceeded the per capita carbon dioxide emissions of either the United Kingdom or the European Union.[23] Per capita carbon dioxide emissions are in the highest quartile of global emissions.[24]

In 2003, the Government proposed an Agricultural emissions research levy to fund research into reducing ruminant emissions. The proposal, popularly called a "fart tax", was strongly opposed by Federated Farmers[30] and was later abandoned.[31]

The Livestock Emissions and Abatement Research Network (LEARN) was launched in 2007 to address livestock emissions.[32] The Pastoral Greenhouse Gas Research Consortium between the New Zealand government and industry groups seeks to reduce agricultural emissions through the funding of research.At the 2009 United Nations Climate Change Conference in Copenhagen, the New Zealand government announced the formation of the Global Research Alliance involving 20 other countries. New Zealand will contribute NZ$45 million over four years towards research on agricultural greenhouse gas emissions.[33]

In 2019, it was announced that the government had awarded funding to cultivate and research a red native seaweed known as Asparagopsis armata to the Cawthron Institute in Nelson. This particular seaweed has been found to reduce methane emissions from animals by as much as 80% when small amounts (2%) are added as a supplement to animal food.[34]

Nitrous oxide is emitted primarily from agriculture, but also comes from industrial processes and fossil fuel combustion. Over 100 years, it is 298 times more effective than CO2 at trapping heat. In New Zealand in 2018, 92.5% of N2O came from agricultural soils mainly due to urine and dung deposited by grazing animals. Overall, N2O emissions increased 54% from 1990 to 2018 and now make up 19% of all agricultural emissions.[35]