Regional Outlook 2021 - Country notes

New Zealand

Progress in the net zero transition

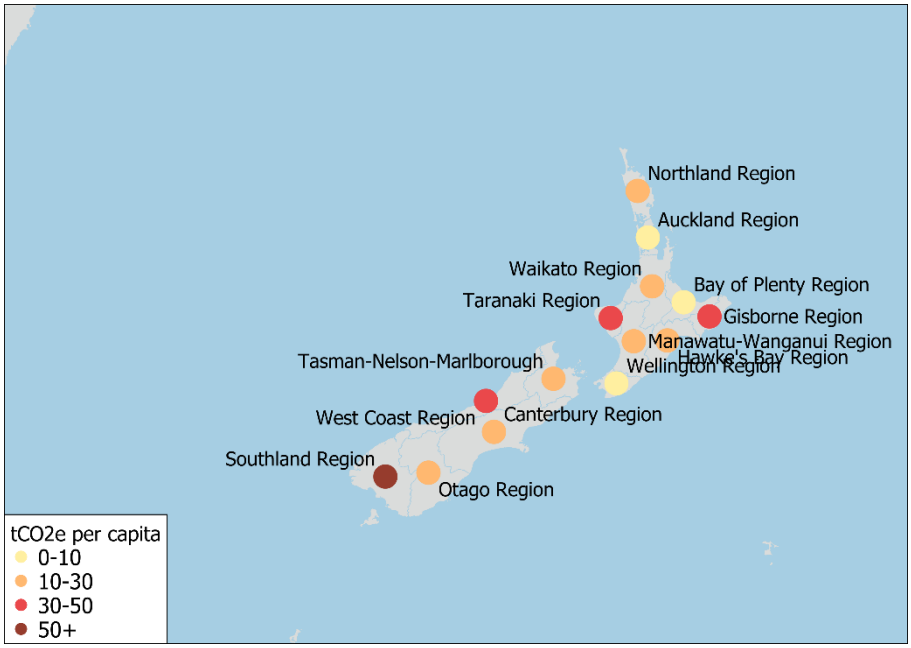
EMISSIONS

2018 OECD average: 11.5 tCO_2e/capita	2018 New Zealand average: 16.6 tCO_2e/capita	New Zealand emissions target: Net zero carbon by 2050

Large regions (TL2)

Figure 1. Estimated regional greenhouse gas emissions per capita

Tons CO_2 equivalent (tCO_2e), large regions (TL2), 2018

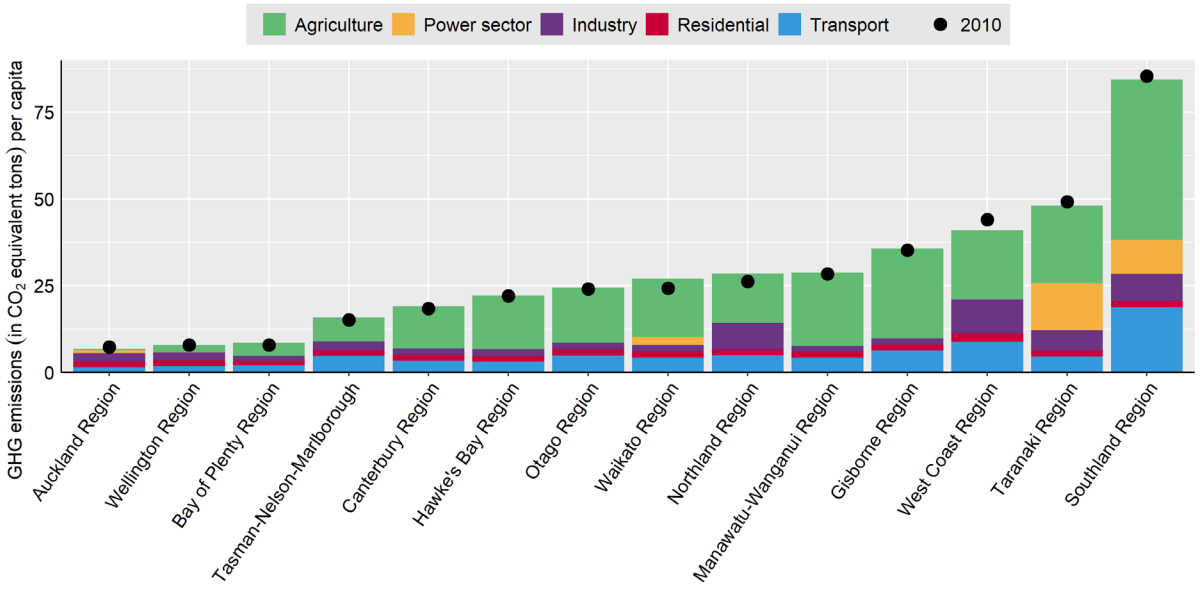


Greenhouse gas (GHG) emissions per capita generated in most of New Zealand's large regions are above 10 tCO_2e per capita. Only Auckland, Wellington Region and Bay of Plenty Region have lower emissions per capita than the OECD average of 11.5.

Estimated emissions per capita in Southland Region are more than ten times higher than in Auckland.

Figure 2. Estimated GHG emissions per capita

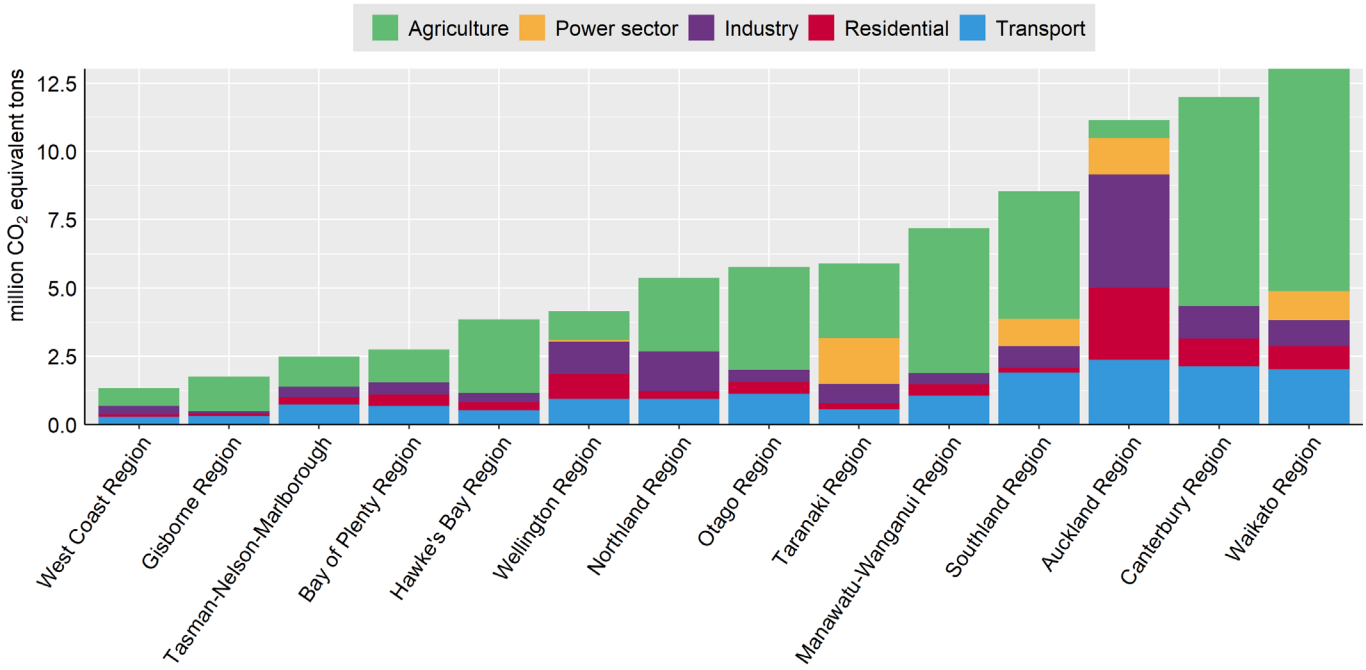
Tons CO_2 equivalent, large regions (TL2), 2010 & 2018



Agricultural emissions are usually the largest contributors, especially to those regions with the highest estimated emissions per capita. Emissions per capita has changed little in most regions between 2010 and 2018.

Figure 3. Estimated GHG emissions

Million tons CO_2 equivalent, large regions (TL2), 2018



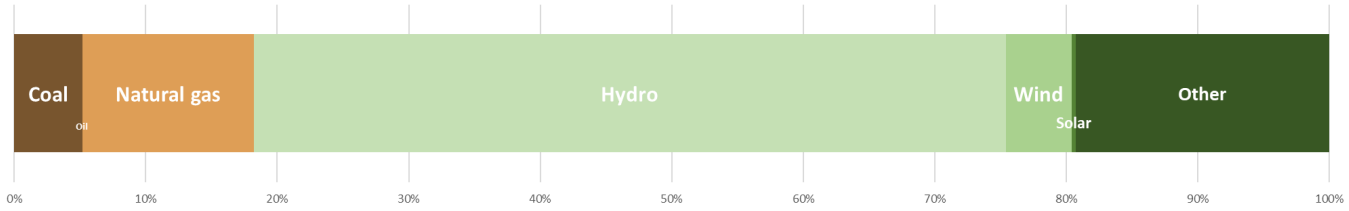
Estimated absolute emissions are highest in Waikato Region, mostly driven by agriculture.

Target notes: Emissions targets included in the Net Zero Tracker database from ECIU before January 25, 2021 are considered.
Figure notes: Figures 1, 2, 3 and the OECD average show OECD calculations based on estimated greenhouse gas emissions data from the European Commission's Joint Research Centre (ECJRC). The Emissions Database for Global Atmospheric Research of the ECJRC allocates national greenhouse gas emissions to locations according to about 300 proxies. . See Box 3.7 in the 2021 *OECD Regional Outlook* for more details.

ENERGY

New Zealand electricity mix

Figure 4. National electricity generation by energy source in 2019

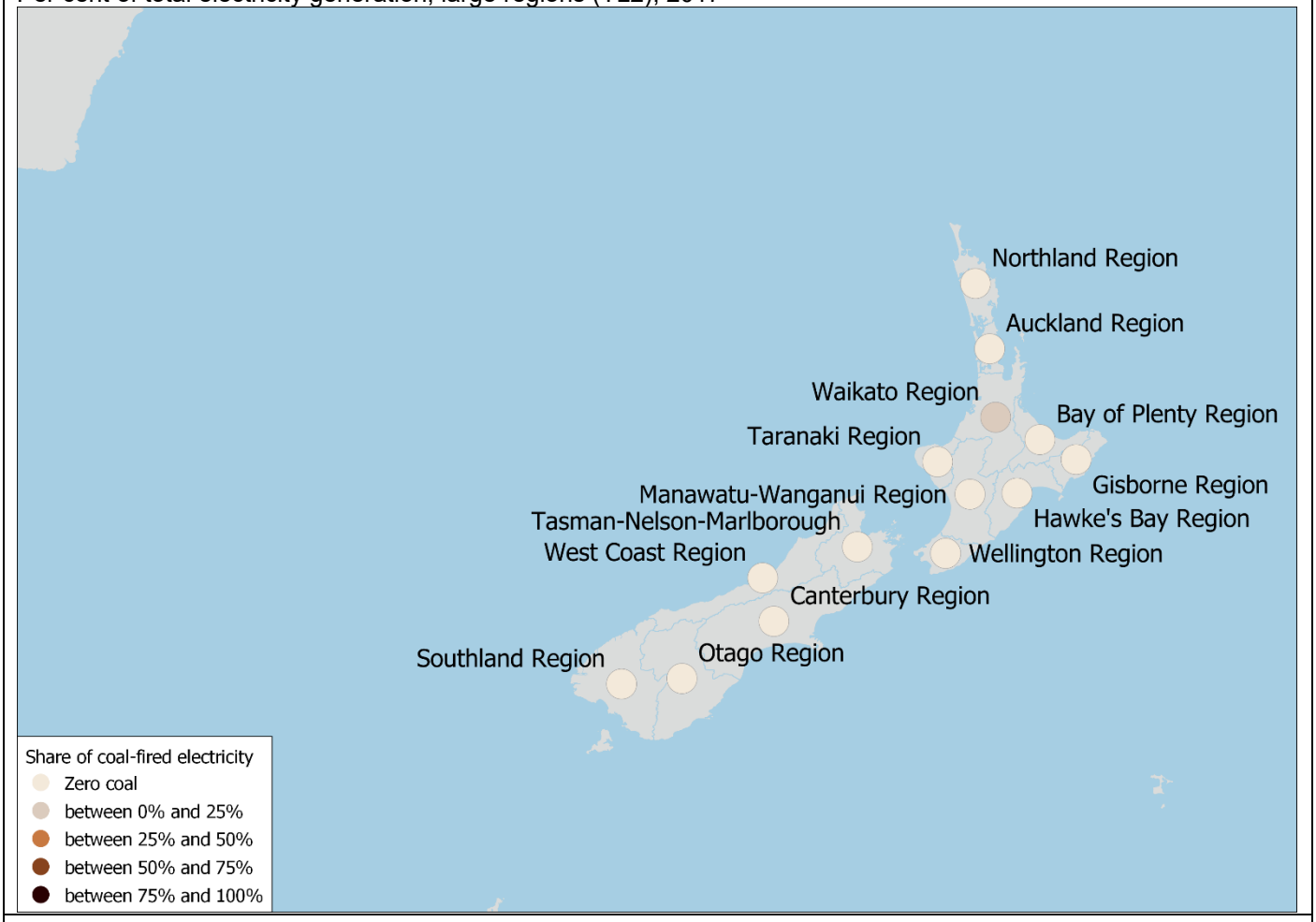


Share of coal-fired electricity generation

2019 OECD average: 23%	**2019 New Zealand average: 5%**	**2030 well below 2°C benchmark for Asia Pacific: <28%** **2030 1.5°C benchmark for OECD countries: 0%**

Figure 5. Regional coal-fired electricity generation estimates

Per cent of total electricity generation, large regions (TL2), 2017



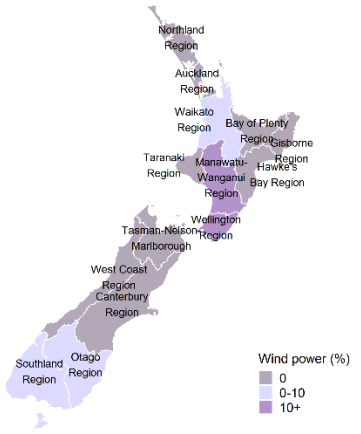
Most regions do not use coal in electricity generation. Only the Waikato Region used coal for slightly over 5% of electricity generation in 2017. No new capacity is planned or being build.

Wind power

2019 OECD average: 8%	2019 New Zealand average: 5%	2030 well below 2°C benchmark for Asia Pacific: >13%

Figure 6. Regional wind power generation estimates

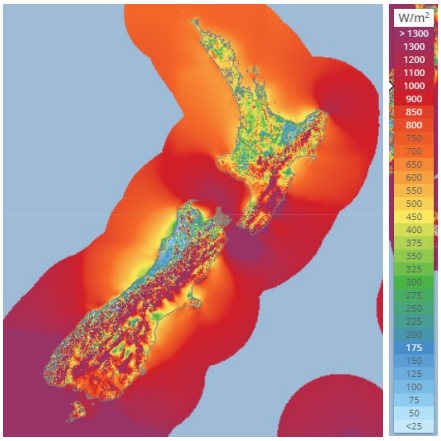
Per cent of total electricity generation, large regions (TL2), 2017



Regional wind electricity generation is estimated using facility level data for 67% of New Zealand's wind capacity.

Figure 7. Wind power potential

Mean wind power density (W/m²)



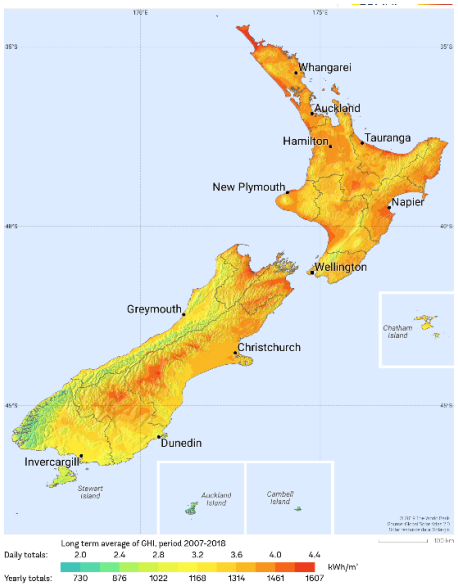
Source: Map produced by The Global Wind Atlas

Solar power

2019 OECD average: 3%	2019 New Zealand average: 0.3%	2030 well below 2°C benchmark for Asia Pacific: >15%

Figure 8. Solar power potential

Global horizontal irradiation (kWh/m²)



Source: Map produced by The Global Solar Atlas

While New Zealand has a lot of zero-emission electricity generation from hydropower the national wind and solar shares are low, although wind power densities are unusually strong in many locations onshore and offshore. Most regions do not currently have any solar and wind power, including in regions with strong potentials. On the other hand, Wellington Region and Manawatu-Wanganui Region exclusively use wind power.

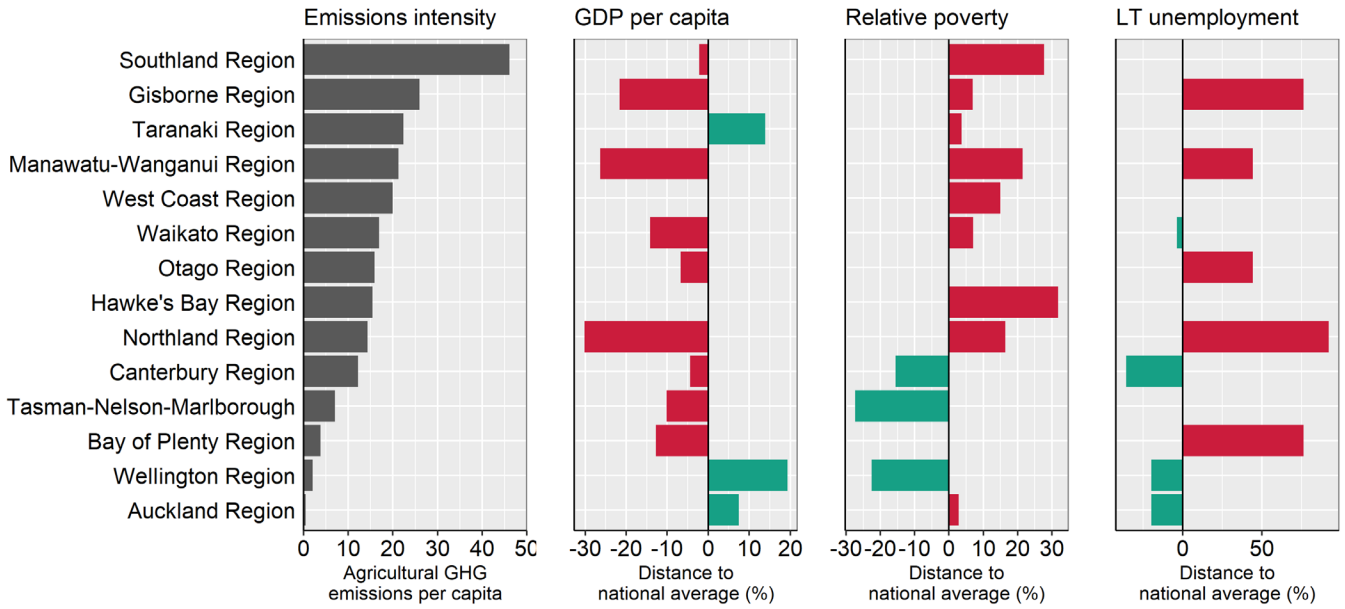
Benchmark notes: The well-below 2 degrees benchmarks show IEA Sustainable Development Scenario (SDS) numbers. The SDS models how the global energy system can evolve in alignment with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. According to the Powering Past Coal Alliance (PPCA), a phase-out of unabated coal by 2030 for OECD countries is cost-effective to limit global warming to 1.5°C.

Figure notes: Figure 4 shows data from the IEA (2020). Figures 5 and 6 show OECD calculations based on the Power Plants Database from the WRI. The database captures electricity generation from the power plants connected to the national power grid. As a result, small electricity generation facilities disconnected from the national power grid might not be captured. See here for more details. Figures 7 and 8 show the power potential of solar and wind. Mean wind power density (WPD) is a measure of wind power available, expressed in Watt per square meter (W/m²). Global horizontal irradiation (GHI) is the sum of direct and diffuse irradiation received by a horizontal surface, measured in kilowatt hours per square metre (kWh/m²).

AGRICULTURE

Figure 9. Estimated GHG emissions from agriculture per capita and relative difference to country means for GDP per capita, relative poverty and long-term unemployment

Large regions (TL2), 2018



While agriculture is not a sector that was broadly identified as being subject to employment risks based on employment effects simulated across OECD countries (See Box 3.9 of the 2021 *OECD Regional Outlook*), it will be subject to important transformations, for example with respect to animal farming, fertiliser use and carbon sequestration.

Regions with higher emissions per capita in agriculture may have a higher transition risk from rising carbon prices. In New Zealand, estimated agricultural emissions per capita are highest in the Southland Region. The transition to net-zero greenhouse gas emissions needs to be just, avoiding social hardship. Regions with higher agricultural emissions per capita tend to have lower GDP per capita and higher poverty risk than the national average.

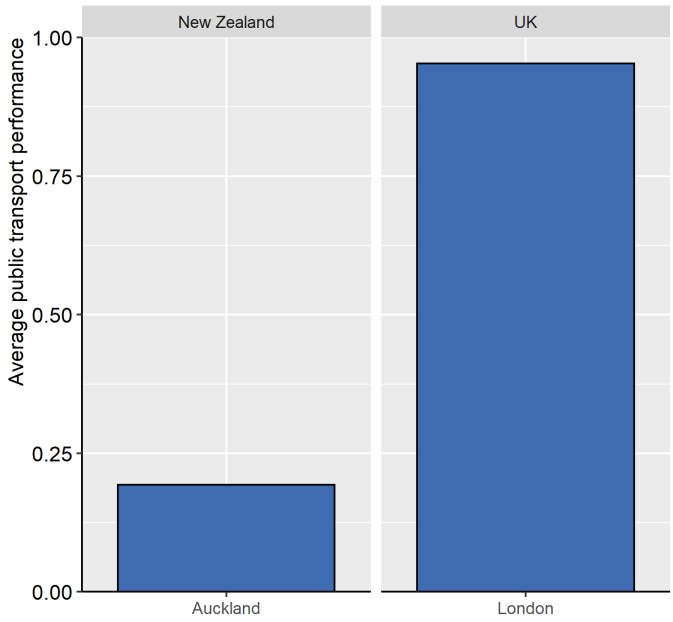
Figure notes: Figure 9 is based on data from OECD Statistics and ECJRC. Poverty risk is assessed from individuals' survey respondents indicating there have been times in the past 12 months when they did not have enough money to buy food that they or their family needed. Long-term unemployment is defined as unemployed for 12 months or more.

TRANSPORT

Modal shift

Auckland has a relatively poor public transport performance. For comparison, London (UK) has among the highest public transport performance scores. Inhabitants of the metropolitan area of London can on average reach 95% of the population living within 8 km in 30 minutes by public transport.

Figure 10. Public transport performance in 2018



Benchmark notes: In the IEA's Sustainable Development Scenario, OECD countries (such as the European Union, Japan and the United States) as well as China fully phase out conventional car sales by 2040. This scenario is aligned with the Paris Agreement's objective to keep the global average temperature increase well below 2°C above pre-industrial levels. The UK Committee on Climate Change finds that all new cars and vans should be electric (or use a low carbon alternative such as hydrogen) by 2035 at the latest to reach net zero GHG emission targets by 2050. A more cost-effective date from the point of view of users is 2030.
Figure notes: Figure 10 is based on data from ITF and OECD Statistics. See Box 3.10 in the 2021 *OECD Regional Outlook* for more details. GDP per capita is expressed in USD per head, PPP, constant prices from 2015.

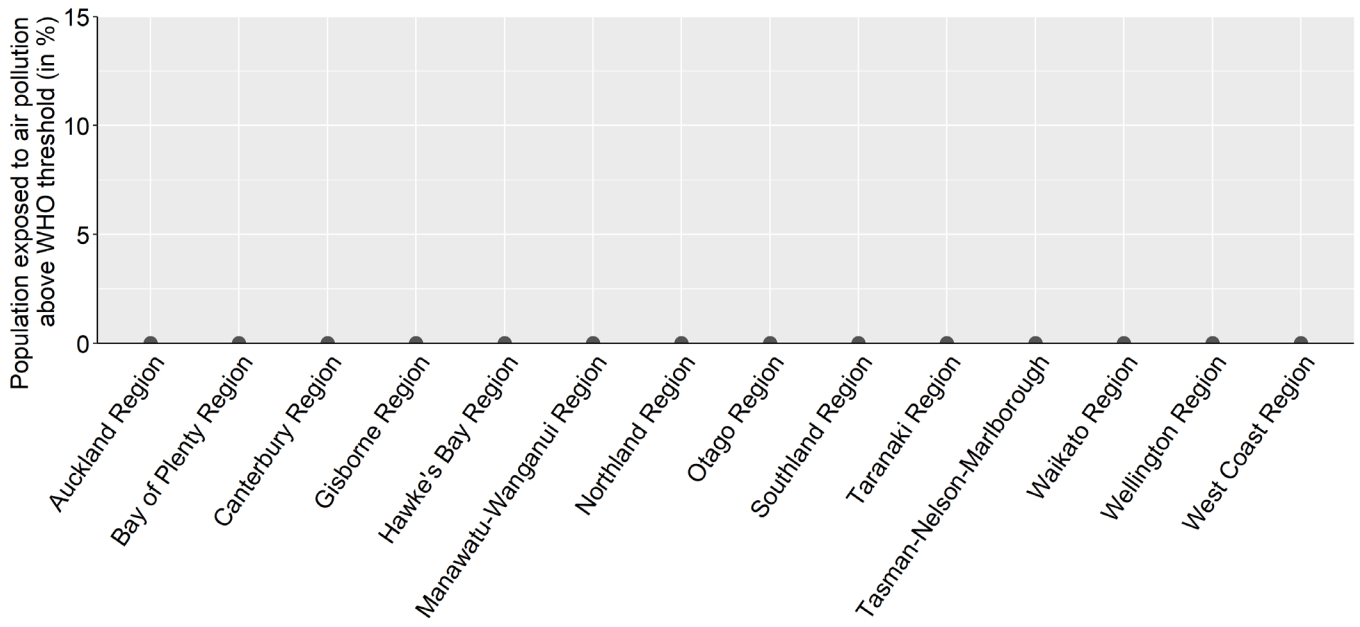
AIR POLLUTION

Large regions (TL2)

2019 OECD share of population exposed above the WHO-recommended threshold: 62%	2019 New Zealand share of population exposed above the WHO-recommended threshold: 0%	WHO-recommended air quality threshold: PM2.5 annual mean concentration < 10 µg/m³

Figure 11. Share of population exposed to levels of air pollution above the WHO-recommended threshold

Percentage of population exposed to above 10 µg/m³ PM2.5, large regions (TL2), 2019



Policies towards net-zero greenhouse gas emissions can bring many benefits beyond halting climate change. They include reduced air and noise pollution, reduced traffic congestion, healthier diets, enhanced health due to increased active mobility, health benefits through thermal insulation, and improved water, soil and biodiversity protection. Some are hard to quantify.

Small particulate matter (PM2.5) is the biggest cause of human mortality induced by air pollution. Major disease effects include stroke, cardiovascular and respiratory disease. Air pollution amplifies respiratory infectious disease such as Covid-19. It affects children the most. It reduces their educational outcomes as well as worker productivity.

Figure notes: Figure 11 is based on data from OECD Statistics.