

How aviation is regulated to address climate change

Aviation and Climate: Part I - Regulatory

November 2022

New Zealand has a sinking lid on greenhouse gas emissions

New Zealand has been a foundation signatory to a succession of global climate change commitments led by the United Nations.

These include the Paris Agreement which is a legally binding international treaty on climate change. It was adopted by 196 nations in Paris on 12 December 2015.

The Agreement's goal is to limit global warming to well below 2°C (preferably to 1.5°C), compared to pre-industrial levels.

To ensure New Zealand meets its obligations under the Paris Agreement, it introduced the Climate Change Response (Zero Carbon) Amendment Act 2019¹.

The Act enshrines emissions reductions targets in legislation, committing New Zealand to:

- Reducing net emissions of all greenhouse gases (except biogenic methane) to zero by 2050
- Reducing emissions of biogenic methane to 24–47% below 2017 levels by 2050, including to 10% below 2017 levels by 2030.

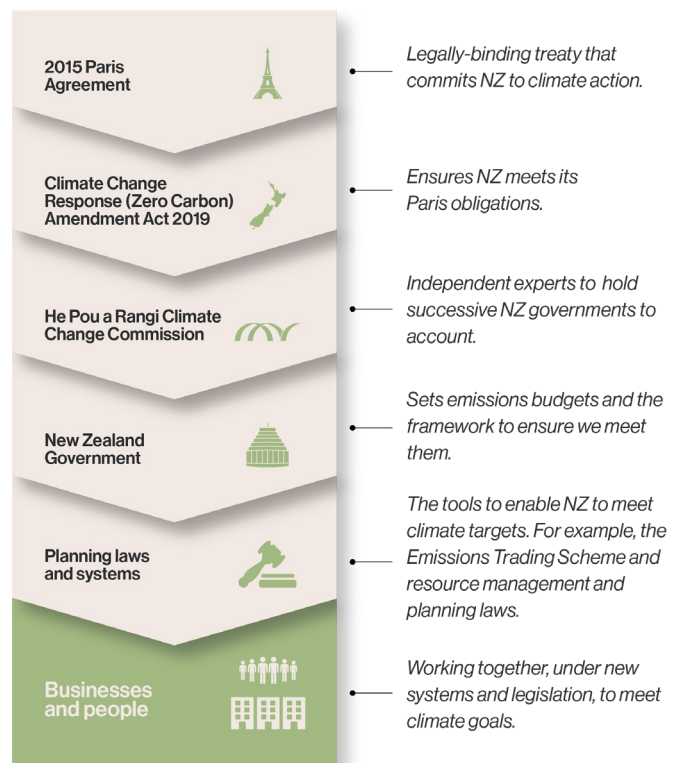
The Act also established He Pou a Rangi Climate Change Commission² which will provide independent, expert advice and monitoring to keep successive governments on track to meeting the country's long-term climate goals.

New Zealand's first three emissions budgets (2022–2025, 2026–2030, 2031–2035) were published in May 2022. These are based on a 2019 baseline and require reductions going forward.

In the same month, the government released New Zealand's first Emissions Reduction Plan (ERP). The ERP sets out how we will meet the first emissions budget for 2022–25, and put the country on track to meet future emissions budgets.

The plan requires action across the economy - in transport (including domestic aviation), energy and industry, building and construction, agriculture, forestry, waste and fluorinated gases.

He Pou a Rangi will release its first monitoring report in 2023.



¹ Ministry for the Environment - <https://environment.govt.nz/acts-and-regulations/acts/climate-change-response-amendment-act-2019/#what-the-amendment-act-does>

² He Pou a Rangi Climate Change Commission - <https://www.climatecommission.govt.nz/>

Aviation emissions are measured using United Nations guidelines

The Ministry for the Environment produces the Greenhouse Gas Inventory³ – an annual report of all human-induced emissions and removals of greenhouse gases in New Zealand.

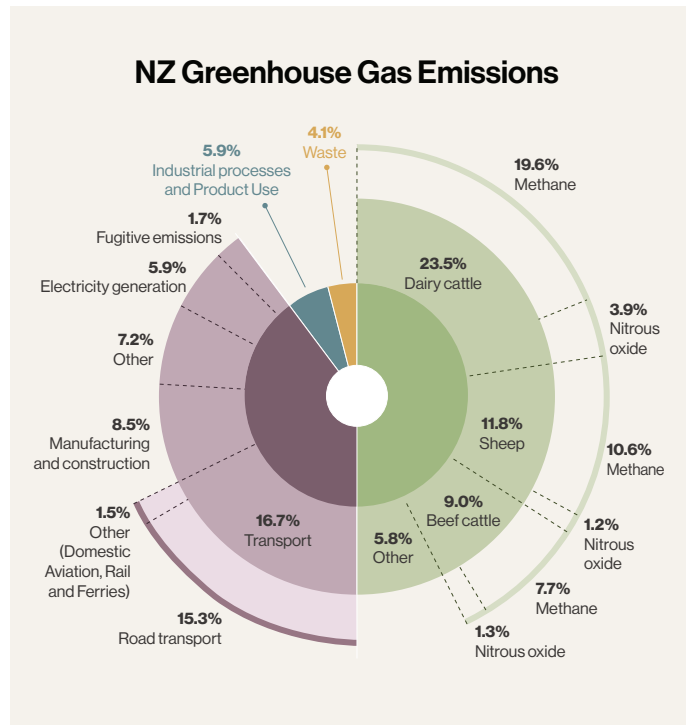
It's compiled using internationally agreed guidelines produced by the Intergovernmental Panel on Climate Change (IPCC).

Agriculture makes up 50% of New Zealand's emissions and another 15% is contributed by road transport.

The inventory shows domestic aviation's portion of that equating to 1.1%.

In line with IPCC guidance, ICAO (see below) is overseeing the creation of robust reduction pathways for international aviation emissions.

Global aviation produces around 2% of all human induced carbon emissions.⁴



Governments are working together to reduce international aviation emissions

The International Civil Aviation Organization (ICAO) is funded and directed by 193 governments, including New Zealand.

ICAO advises those governments on new standards for international aviation. Governments consider and shape this advice to achieve consensus and each then adapts its own country's regulations in line with the new standard.

This enables the alignment of each country's national regulations to achieve safe, secure and sustainable air operations on a truly global basis.

To address climate change, ICAO introduced two primary goals in 2010:

- To improve fuel efficiency annually by 2% from 2010 onwards
- To achieve carbon neutral growth from 2020.

The global pandemic's impact on aviation means the carbon neutral growth commitment is yet to be tested.

ICAO has developed a four pillar strategy to decarbonise aviation:

Operational Improvements	Aircraft Technology	Sustainable Aviation Fuels (SAFs) Travel	Carbon Offsetting
<ul style="list-style-type: none"> Zero carbon airports Efficient ground operations Low carbon ground technology 	<ul style="list-style-type: none"> Improving current aircraft design Fuel-efficient flying New low and zero carbon aircraft (electric and hydrogen) 	<ul style="list-style-type: none"> SAFs can deliver an 80% reduction in emissions 	<ul style="list-style-type: none"> The Carbon Offsetting and Reduction Scheme for International Aviation (CORSA) will require airlines to offset CO₂ emissions from international flights.

CORSA is the first global market-based measure for any sector. Its tight framework ensures international aviation emissions will be offset with credibility and consistency, and provides a financial incentive for airlines to continue reducing emissions.

New Zealand's government has confirmed it will participate in CORSA⁵.

³ Ministry for the Environment – Greenhouse Gas Inventory - <https://environment.govt.nz/publications/new-zealands-greenhouse-gas-inventory-1990-2020-snapshot/>

⁴ International Civil Aviation Organization - <https://www.icao.int/environmental-protection/CORSA/Pages/CORSA-FAQs.aspx>

⁵ International Civil Aviation Organization - <https://www.icao.int/environmental-protection/CORSA/Pages/default.aspx>

New Zealand's plan to decarbonise domestic aviation

He Pou a Rangi Climate Commission's view is that aviation is particularly challenging to decarbonise because there is currently no commercially viable sustainable aviation fuel (SAF) supply or fossil fuel alternatives for aviation in New Zealand.

'Chapter 10: Transport'⁶ of New Zealand's ERP notes that, in many cases, air travel is the core mode for inter-city and inter-regional travel so improving its sustainability is critical.

New Zealand's rail network measures around 4,000 kilometres, with its domestic aviation network spanning more than 20,000 kilometres.

The ERP highlights the importance of increasing the use of low carbon fuels for trains, ships, heavy trucks and planes and commits the government to:

- Setting a target and introducing policies so that at least 140 million litres (3% of domestic liquid fuel) of low carbon liquid fuels are sold in Aotearoa by 31 December 2035
- Introducing low carbon fuel standards or mandates to increase demand for low carbon fuels, with specific consideration given to aviation

- Introducing incentives to establish low emissions fuel plants, such as biofuel or SAF, and make those fuels more competitive with traditional fossil fuels.

The ERP also outlines the formation of a new public-private partnership, known as Sustainable Aviation Aotearoa, to focus on decarbonising aviation within New Zealand. This is tasked with developing a net zero pathway for the sector including preparing for electric and green hydrogen powered aircraft and SAF supply.

Key initiatives to decarbonise aviation include:

- Developing and setting specific targets for decarbonising domestic aviation in line with New Zealand's 2050 targets
- Implementing a sustainable aviation fuel mandate.

New infrastructure must support New Zealand's net zero 2050 goals

'Chapter 7: Planning and Infrastructure'⁷ of the ERP outlines how New Zealand will change the way it uses land and resources so it plans, builds and operates infrastructure to support transition to a low-emissions, resilient society over the next 30 years.

New Zealand's planning laws, including the Resource Management Act, are being adapted to ensure they are tailored to deliver on the country's net zero 2050 goals.

The ERP requires that decisions about investment in infrastructure take into account the whole-of-life costs and benefits of that investment, including the cost of emissions associated with that infrastructure.

It also looks at how to prevent development in areas vulnerable to the impacts of climate change, such as flooding.

As a whole, New Zealand is entering a new era of economy-wide carbon budgets that will drive two things:



All infrastructure, now and in the future, will be required to support New Zealand's net zero 2050 pathway.



Careful consideration of budgeted carbon emissions so they are allocated to sectors that deliver the best returns for New Zealand.

⁶ Ministry for the Environment - <https://environment.govt.nz/assets/Emissions-reduction-plan-chapter-10-transport.pdf>

⁷ Ministry for the Environment - <https://environment.govt.nz/assets/Emissions-reduction-plan-chapter-7-planning-and-infrastructure.pdf>