

NZ Climate Policy & Carbon Pollution Profile

The “human activity responsible for rapid climate change” is the release of greenhouse gases (primarily carbon compounds) into the atmosphere, primary from the burning of fossil fuels, and also from agriculture, forestry and land-use changes.

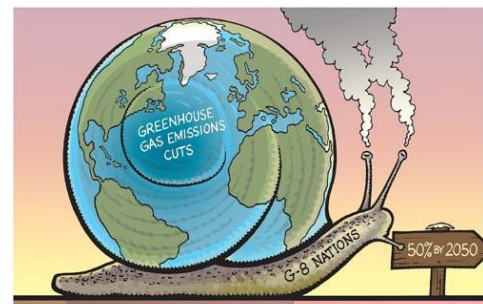
New Zealand Climate Responses

New Zealand has commitments to reduce greenhouse gas emissions under the United National Framework Convention on Climate (UNFCCC) and the Kyoto Protocol.

The first Kyoto Commitment period (2018 – 2012), required reducing emissions to 1990 levels. New Zealand made a further commitment to reduce emissions to 5% below 1990 levels by 2020. There is an conditional responsibility to reduce emissions to 10-20% below 1990 levels by 2020 and a long term target of 50% by 2050. A new agreement is planned for 2015, with implementation by 2020.

The Ministry for Environment 2013 National Communication on Climate Change says that New Zealand is on track to meet the 5% reduction target because of a surplus of ‘units’ (under the ETS) in the first period. These surplus units mostly come from forestry. Planted forests provide most of the carbon sinks and cover 21% of total forest cover, and amounts to 2.1 million hectares . Variations in forestry are due to harvesting and replanting cycles.

Overall MFE reports an overall 22% gross increase in carbon emissions since 1990, and a net increase of 88%. New Zealand’s net emissions are reduced because of extensive forest planting in the 1990’s.



<http://politicalhumor.about.com/od/globalwarming/ig/Global-Warming->

Emissions Trading Scheme

The New Zealand Emissions Trading Scheme (ETS) is a financial market-based approach to reducing emissions. It is the system in which New Zealand Units are traded. Under the ETS, certain sectors are required to acquire and surrender NZUs to account for their direct greenhouse gas emissions or the emissions associated with their products

The Government has chosen the New Zealand [Emissions Trading Scheme \(NZ ETS\)](#) as its primary tool to reduce emissions, as it is the least-cost way of reducing emissions. The NZ ETS puts a price on emissions and therefore creates a financial incentive for all New Zealanders – especially businesses and consumers – to change behaviour, with the incentive of The NZ ETS:

- reduce emissions
- invest in clean technology and renewable power generation, and
- plant trees.

At present forestry, transport, the use of fossil fuels in the energy sector, industry, synthetic gas and waste are included in the ETS. Agriculture has reporting requirements but does not have ‘surrender obligations’ under the ETS. This means that agriculture is excused from climate obligations and protected from the costs of their emissions. Yet agriculture contributes 47.2% of New Zealand’s emissions.

The price on emissions (eligible emission units) means that companies which emit greenhouse gases have to pay for these emissions . The costs, such as increases in energy prices, are passed on to consumers. Owners of companies that absorb emissions, such as forests will earn ‘units’.

Carbon dioxide removal from the atmosphere through forest plantations has a significant effect on reducing the balance of NZ emissions.

New Zealand's International Emissions Rating

It is hard to get a full comparative profile of NZ in relation to other countries because of our small economy. An international comparative assessment from the German 'Climate Change Performance Index' 2014 shows NZ in the bottom half of 42nd out of 61 countries, therefore rated 'poor' on the Climate Change Performance Index. [<http://germanwatch.org/en/7677>].

This assessment is based on an aggregation of emissions trends, emissions levels and climate Policy. On this list Denmark is the top performer and Saudi Arabia the worst. Australia is at number 57. On each of the performance criteria, NZ trends and emission levels are rated as moderate, and policy, as very poor. The Performance Index states:

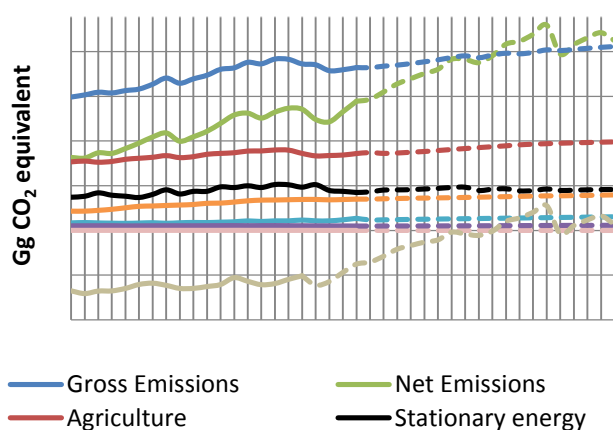
Regarding emissions levels, results are poor across the board and inadequate by far to meet the 2°C limit set by the UNFCCC in Cancun.

The heavy increase in coal use is reason for the massive increase in global absolute emissions. New coal power stations cause lock-in situation of many states – the 2°C limit will be without reach within this decade, if this trend continues. Increases in energy efficiency are not enough to counter this effect. Investments in renewable energy continue to grow dramatically, but on a global scale these are not yet enough to lower the emissions trend.

New Zealand Emissions Profile

The profile of NZ emissions as dramatically increasing in all sectors and in particular showing a trajectory above 1990 levels. The negative levels of Forestry [LULU] – a net surplus is the reason why we can say we are meeting the target of 5% below 1990 levels.

NZ emissions 1990 - 2030 under the UNFCCC. Gross emissions exclude forestry

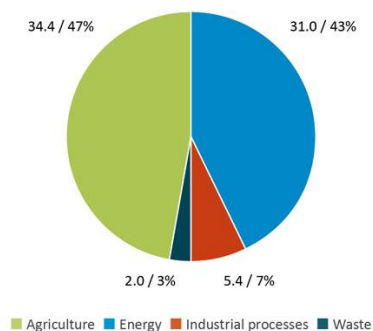


The four sources that contributed the most to this increase in total emissions were emissions from dairy cattle, road transport, agricultural soils and release of hydrofluorocarbons (HFCs) from industrial and household refrigerant and air-conditioning systems.

During the first commitment period NZ contributed \$30 million per year to climate change financial support to developing countries, focusing on renewable energy in the Pacific.

Why is agriculture and dairy not included in the gross emissions calculation? Agriculture was the largest contributor to New Zealand's emissions in 2011 (47.2%) followed by the energy sector (42.6%). www.mfe.govt.nz/publications/climate/greenhouse-gas-inventory-2013-snapshot/

Almost half of New Zealand's emissions come from agriculture, compared to about 12 per cent in other developed countries. Agricultural emissions increased



Note: Emissions from the solvent and other-product use sector are not represented in this figure.

NZ Greenhouse gas emissions by sector 2011

by 12 per cent between 1990 and 2011 (MFE 2013, p. 37)

NZ is the world's largest exporter of dairy products and sheep meat.

85 percent of food produced in NZ is exported. Dairy makes up 25 percent of NZ total exports, or \$ 11.6 billion worth.



Transport

The transport sector is responsible for 44 per cent of New Zealand's energy greenhouse gas emissions, with cars and trucks responsible for the majority of carbon dioxide emissions. If New Zealand moved to more public transport this could offer significant energy savings.

The Government's primary mechanism to mitigate greenhouse gas emissions from the transport sector is to include transport fuels in the NZ ETS. (Sixth 78)

Projected Emissions for NZ

A graph showing NZ's overall projected emissions:

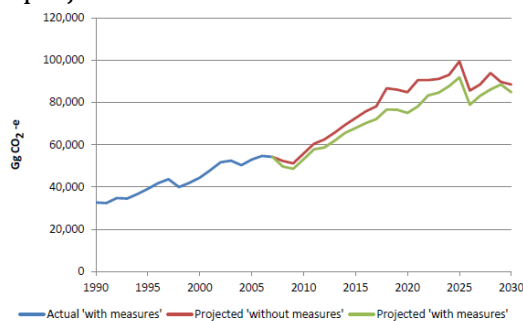


Figure 1.2: Actual and projected net emissions, with measures versus without measures, 1990 – 2030

Note: Projections start at 2008 because forestry data from 2008–2012 will not be confirmed until 2014.

New Zealand Energy Profile

In NZ 75% of electricity comes from renewable energy sources, meaning the resource is naturally replenished. This is mainly from hydro and geothermal sources. In 2012 hydro generation provided 53 per cent of New Zealand's total electricity, followed by geothermal (14 per cent), wind (5 per cent) and bioenergy (1 per cent). The remaining 27 per cent was provided by fossil fuel thermal generation plants using gas, coal and oil (figure 2.6).



Tongariro Power Scheme

www.schoolgen.co.nz/pdf/GED9821%20Hydro%20Brochure%20FN_Art.pdf

Due to the abundance of renewable energy, New Zealand's electricity generation emissions per capita are low compared with many other countries. In 2011 electricity generation contributed 8 per cent of New Zealand's total greenhouse gas emissions, an increase of 40 per cent since 1990. (MFE 2013, Sixth National Communication under UNFCCC p. 30). A mix of energy supplies is needed to manage uncertainty in alternative energies, for example the sun does not always shine or wind varies.

Wind energy contributes about 5% of electricity supply. Wind has one of the lowest environmental impacts and does not produce greenhouse emissions.

Solar energy is being used both to heat water for 1.6% of homes to generate electricity by means of photovoltaic panels. The number is growing by 30-40% annually. If every house in NZ had a solar panel it would be possible to generate 25% of domestic power supply from solar.

About 5% of energy comes from 'Distributed energy'. This is generation is from small-scale systems and is used on-site or nearby. These generate electricity for homes, farms, businesses and industries.

Distributed generation projects are hooked up to local networks which are connected to the national grid. This means that when there is not enough electricity being generated by the local project, users can still get electricity from the network. It also means if excess electricity is being generated, the excess can be exported into the network.

Nearly all transport in New Zealand relies on fossil fuels. Exceptions include electric trains and buses, and vehicles running on biofuels. Electric vehicles may be an alternative in the future.

Energy Efficiency and Conservation Authority is mandated to remove barriers to, and encourage renewable energy technologies. This includes providing independent and impartial information, and supporting some projects through the Resource Management Act process.

<http://www.eeca.govt.nz/efficient-and-renewable-energy>

Gas

Natural gas is produced in the Taranaki region and transmitted by pipelines across the North Island to various distribution networks. In 2012 New Zealand produced 192 petajoules of gas from 17 gas fields. Nearly half of New Zealand's gas is used for electricity generation and the remainder is used by commercial and residential sectors, and agriculture, forestry and fishing industries (MFE 2013 p. 36)

In 2011 gas contributed 9 per cent of New Zealand's total greenhouse gas emissions. Between 1990 and 2011 emissions from gas consumption decreased by 3 per cent.

Oil

Due to its high quality, and consequent high value, almost all of New Zealand's crude oil (98 per cent in 2012) is exported. Most of the refined oil consumed in New Zealand (about 70 per cent in 2012) has been imported and refined locally.

In 2012 New Zealand produced 87 petajoules (or 40,300 barrels per day) of oil from 19 fields in the Taranaki region.

In 2011 oil contributed 25 per cent of New Zealand's total greenhouse gas emissions. Between 1990 and 2011 emissions from oil increased by 50 per cent.

Coal

New Zealand produced 4.9 million tonnes of coal in 2012. Around half of local production was exported, and most of this was bituminous coal. New Zealand has an estimated 15 billion tonnes of coal deposits, with lignite making up 80 per cent of this.

In 2012 New Zealand burned 3.2 million tonnes of coal. The coal was mainly used for electricity generation and industrial purposes. Coal use contributed 5 per cent of New Zealand's total greenhouse gas emissions in 2011. Between 1990 and 2011 emissions from coal increased by 16 per cent.



Huntley coal: www.solidenergy.co.nz/index.html

There is evidence that companies, such as General Motors, bought out patents to alternative energy cars, electric cars in particular, to protect their market dominance in petroleum fueled cars < www.examiner.com/article/oil-company-ownership-of-battery-patents-threatens-electric-car-production >

The pressure to convert to low carbon cars is turning the tide on production of electric cars, although they seem out of reach as an alternative in the immediate future. Is this also an option for the church to consider when purchasing vehicles?