



# NEW ZEALAND'S RESPONSE TO CLIMATE CHANGE



In simplifying this information, some detail has been omitted. For more complete information about climate change science and policy, check out the website: [www.climatechange.govt.nz](http://www.climatechange.govt.nz)

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## NEW ZEALAND'S RESPONSE TO CLIMATE CHANGE

The world's climate is changing. Most international climate scientists agree that a major cause is human activity increasing the level of greenhouse gases in the atmosphere. The likely result is not simply global warming, but more floods, storms, droughts and other extremes of weather, and a rise in sea levels, which would affect coastal communities.

There is international agreement that countries must work together to limit climate change by tackling the rise in greenhouse gases. This brochure gives background information on the international agreements that New Zealand has signed and highlights how we plan to meet long-term climate change objectives.

For more information on the science of climate change – what it is, the gases involved and the likely effects – check out the website: [www.climatechange.govt.nz](http://www.climatechange.govt.nz) or contact the New Zealand Climate Change Office: [info@climatechange.govt.nz](mailto:info@climatechange.govt.nz)

## INTERNATIONAL AGREEMENTS

Climate change is a global problem so it needs a co-ordinated international response. Countries have been working through the United Nations to do this through several international agreements.

The first major agreement to tackle climate change was the United Nations Framework Convention on Climate Change (UNFCCC), adopted in 1992. The UNFCCC recognised that human activity was starting to affect the world's climate. It was signed by 189 countries, including the United States, Australia and New Zealand.

The UNFCCC set targets to reduce greenhouse gases and ways of measuring and reporting on these emissions. But the targets were voluntary and it was soon recognised that stronger action was needed. The Kyoto Protocol followed in 1997.

More information:  
[www.climatechange.govt.nz >about/UNFCCC](http://www.climatechange.govt.nz/about/UNFCCC)

### The Kyoto Protocol

New Zealand is one of 149 nations that are working to reduce greenhouse gas emissions through the Kyoto Protocol.

The Kyoto Protocol has compulsory targets for reducing emissions. It recognises that the comparatively rich, developed countries have caused most of the growth in greenhouse gases. So, to start with, it is those countries that have binding targets to reduce emissions. The overall target is to reduce the greenhouse gas emissions from developed countries to five percent below 1990 levels over 2008–2012.

However, each developed country has its own target reflecting its own circumstances. New Zealand's target from 2008 to 2012 is to reduce its emissions to the level they were in 1990. These five years are known as the first commitment period.

Of the developed countries that negotiated the Kyoto Protocol targets in 1997, all but three (Australia, Monaco and the United States) have agreed to be bound by it. Those that are participating, including the European Union, Japan, Canada and Russia, account for 62% of the developed world's 1990 emissions.

The Kyoto Protocol is designed to be the first step toward a future with lower emissions. Targets beyond 2012 have not yet been agreed, but it is clear that greater cuts in emissions and broader participation will be needed.

More information:

[www.climatechange.govt.nz](http://www.climatechange.govt.nz) >about/kyoto

### International trading

If a country produces more greenhouse gases than its target allows, it must take responsibility for the excess emissions. It does this by using **sink credits** from forestry or by buying emission units. The Kyoto Protocol sets up an international system so **emission units** can be bought and sold.

### How does it work?

Governments are required to hold one **emissions unit** for each tonne of carbon dioxide (CO<sub>2</sub>), or its equivalent in other greenhouse gases, emitted in that country. Each country starts with an allocation of emission units equal to their target under the Protocol. If a country does better than its target, it can sell surplus emission units to countries that are not meeting their targets.

Trading was introduced to ensure that the cuts in greenhouse gases would be made where they were most cost-effective. Trading sets an international price for emissions. In early 2005, the trading price was around NZ\$15 per unit, or to put it another way, NZ\$15 per tonne of CO<sub>2</sub> emitted.

The role of forests is important under the Kyoto Protocol. Forests soak up and store CO<sub>2</sub> as they grow. Countries earn credits for the CO<sub>2</sub> taken up by forests that have been planted since 1990 on land where there were previously no forests. These forestry units are commonly called **sink credits**. But countries must also hold emission units to cover the CO<sub>2</sub> released when trees are harvested and forests cleared.

**NEW ZEALAND IS UNUSUAL**

New Zealand must report internationally on its annual emissions of greenhouse gases. However, New Zealand's situation is unusual in three ways.

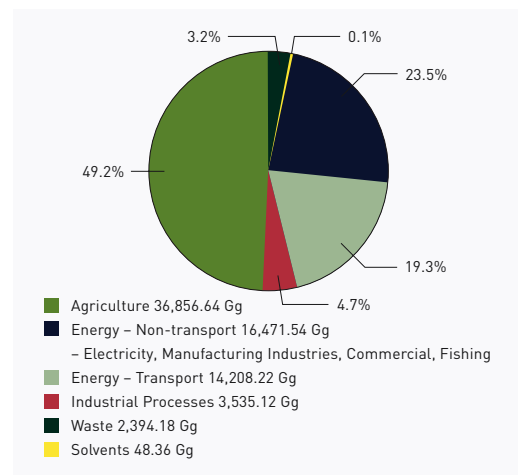
**First:** around half (49%) of our total greenhouse gases come from agriculture – methane produced by cattle, sheep, deer and goats digesting grass and nitrous oxide from manure, fertilisers and soils. New Zealand is the only developed country where agriculture plays such an important role. For all other developed countries, energy emissions (e.g. power, transport and manufacturing) dominate.

**Second:** about 70% of our electricity comes from renewable sources, mainly from hydro-power schemes but also wind and geothermal energy. Our CO<sub>2</sub> emissions per unit of power output are among the lowest in the developed world. While 43% of New Zealand emissions come from production and use of energy, much of this is from fuels used for transport (19% of all emissions). Recently, increasing demand has led to more use of fossil fuels such as coal, gas and oil to produce electricity.

**Third:** New Zealand is unusual in having a high level of forestry compared to many developed countries. Forests absorb CO<sub>2</sub> from the atmosphere as they grow, acting as carbon storage or 'sinks'. Sink credits earned from forests planted since 1990 offset our greenhouse gas emissions to a significant extent.

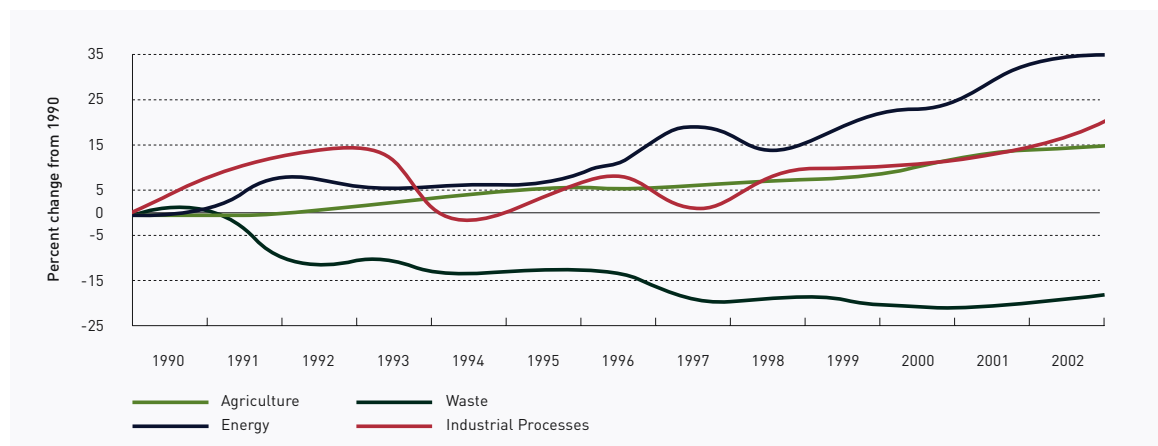
The trends show that New Zealand's greenhouse gas emissions are growing. The strongest areas of growth are transport, methane and nitrous oxide from agriculture, and use of fossil fuels to produce electricity. Greenhouse gas emissions from transport have increased 61% from 1990 to 2002 (an average of 4% a year). Increased petrol and diesel consumption is the main reason for the rise in emissions in the energy sector shown in Figure 2.

**Figure 1. New Zealand's sectoral greenhouse gas emissions in 2002** (all figures Gg CO<sub>2</sub> equivalent, percentage of national total emissions in 2002)



More information on NZ's greenhouse footprint: [www.climatechange.govt.nz >about/nz-s-greenhouse-emissions](http://www.climatechange.govt.nz/about/nz-s-greenhouse-emissions)

**Figure 2. Change in sectoral greenhouse gas emissions from 1990–2002**



### WHAT IS NEW ZEALAND DOING TO REDUCE EMISSIONS?

The government believes that when setting policy we need to look further than 2012 and the first five years of commitments under the Kyoto Protocol. New Zealand's climate change policies are focused on ensuring that we can move smoothly to meet more demanding obligations in the future, achieve permanent reductions in emissions of greenhouse gases and encourage planting of forests that will store carbon in long-term sinks.

The government wants its decisions to be consistent with a healthy and growing economy. Its aim is to spread costs, incentives and opportunities across the economy and assist the disadvantaged in our society.

The climate change policies below were adopted in 2002, following extensive consultation.

#### Foundations for action

Climate change policy starts with a set of ongoing initiatives that contribute to emissions reduction:

- the National Energy Efficiency and Conservation Strategy, targeting a 20% improvement in New Zealand's energy efficiency by 2012, and a significant (30 petajoules) increase in renewable energy
- the New Zealand Transport Strategy, encouraging more energy-efficient transport choices such as public transport
- the New Zealand Waste Strategy, reducing emissions from landfills
- the Sustainable Energy Framework, setting the context for future development of a more sustainable energy system
- research into the science of climate change and new technologies to address it.

### A carbon tax

The Kyoto Protocol essentially puts a price on greenhouse gas emissions. This means that the price of fossil fuels will better reflect the environmental costs of using these fuels. The intention is that businesses and households begin to take these environmental costs into account when making decisions about what to buy or use.

A New Zealand tax on greenhouse gas emissions from fossil fuels will be introduced from April 2007. This revenue-neutral carbon tax will be applied to fossil fuels that emit CO<sub>2</sub> – including coal, gas, diesel, petrol and heavy fuel oil – and to CO<sub>2</sub> emissions from industrial processes such as cement manufacture. The carbon tax will initially be set at NZ\$15 per tonne, and will only be adjusted if the price of emission units on the international market varies substantially from this. The tax will be capped at a maximum of NZ\$25 a tonne of CO<sub>2</sub> for 2008–2012.

Revenue from the carbon tax will be returned to the economy through other tax changes. That is, the carbon tax is to be a shift in taxation, and will not increase the overall amount of tax collected.

From 2008 to 2012, the carbon tax is not expected to have a major impact on energy prices for households. At NZ\$15 a tonne of CO<sub>2</sub>, it would increase the price of petrol by 4 cents per litre and electricity by about 1 cent per unit (kWh). For a typical household, the cost is estimated to be in the order of \$4 per week for electricity, petrol and other fuels.

Many people will be able to offset increased costs through simple measures to use energy more wisely, such as keeping cars maintained properly, turning appliances off at the wall when they are not in use and using energy-efficient light bulbs.

More information:

[www.climatechange.govt.nz](http://www.climatechange.govt.nz) >policy-initiatives/carbon-tax

### Big industry

Some businesses will be particularly affected by the carbon tax. These are firms that emit high levels of greenhouse gases and that compete internationally with companies not subject to such a tax. The government will conditionally agree to grant eligible companies full or partial relief from the carbon tax if they make a commitment to move to international best practice in their management of greenhouse gas emissions. These contracts between the government and eligible firms are called Negotiated Greenhouse Agreements.

To meet this commitment, many businesses will need to make major improvements to their current processes.

### Energy intensive businesses

Some businesses use much more energy than others. Examples include foundries, timber drying, food processing, chemical manufacturers, tyre makers and glasshouse crops. For these firms, energy costs can be more than 10 percent of their total costs (compared with less than 3 percent for most businesses). The carbon tax could have a significant effect on these businesses, yet they may be too small to take advantage of Negotiated Greenhouse Agreements.

A package of assistance for these businesses to adjust to a carbon tax will be piloted from 2005, in the form of:

- a grant scheme to encourage investment in energy-efficient technologies
- demonstration projects to increase innovation and technology uptake
- assistance for company directors to influence conservation of resources in corporate governance
- information for company managers and staff about carbon tax and energy efficiency.

The pilot will mean business and government can work together to further assess and address the adjustment needs of industry prior to the introduction of the carbon tax.

The Ministry for the Environment and the Energy Efficiency and Conservation Authority (EECA) are doing energy audits in energy intensive industries so that they can provide guidance about how to be more efficient in energy use. EECA also offers a range of services, including information about energy efficiency and a grant to contribute to the cost of energy audits for larger firms.

### Small firms

Most small businesses spend less than 3 percent of their total costs on energy. However, there are still ways for them to save energy that are easy to do and cost little or nothing to implement. Information is available from most electricity suppliers, from energy consultants, and from EECA through their website: [www.emprove.org.nz](http://www.emprove.org.nz) Some electricity suppliers are offering an online service where businesses can do their own assessment of energy use. They can then call on EECA or their supplier for further information about products and services to improve energy use.

More information:  
[www.eeca.govt.nz](http://www.eeca.govt.nz)

### Opportunities for business and innovation

#### Projects to Reduce Emissions

Organisations and individuals can apply to the Projects to Reduce Emissions programme if they have a proposal that will reduce New Zealand's greenhouse gas emissions during 2008–2012.

Successful projects are entitled to Kyoto emission units that can be traded on the international market. The financial value of these units will increase the economic viability of the project.

To qualify for support, a project must be more than 'business as usual'. In other words, if emission units are allocated there must be a genuine environmental benefit from the project. This is not intended to be a windfall gain for investments that would have happened anyway.

Projects are selected through a competitive tender. Those whose projects are successful are entitled to emission units on condition that their projects are completed and deliver the expected reductions in greenhouse gases.

Successful projects to date include wind farms, electricity generation from landfill gas and small hydro plants, and projects to replace fossil fuels with renewable bio-energy such as wood waste.

#### **Business opportunities**

A growing number of businesses in New Zealand are already taking advantage of opportunities related to climate change. These include providing renewable energy systems, energy efficiency services and technologies. The government is looking at how it can encourage further innovation and opportunities, both in New Zealand and in overseas markets.

The Kyoto Protocol has a Clean Development Mechanism that enables businesses in developed countries to receive credit for projects that reduce greenhouse gases in developing countries.

The government is looking at ways to encourage New Zealand businesses to take advantage of these opportunities. Businesses from countries such as Australia which have not made a commitment under the Kyoto Protocol must partner with countries like New Zealand if they want to participate in Kyoto opportunities such as the Clean Development Mechanism.

Other government programmes offering assistance to business are run by the Energy Efficiency and Conservation Authority ([www.eeca.govt.nz](http://www.eeca.govt.nz)),

New Zealand Trade and Enterprise ([www.nzte.govt.nz](http://www.nzte.govt.nz)) and Technology New Zealand ([www.frst.govt.nz/business](http://www.frst.govt.nz/business)).

More information on business & business opportunities: [www.climatechange.govt.nz](http://www.climatechange.govt.nz) >business/business&industry

#### **Agriculture**

Although the emissions of methane and nitrous oxide from agriculture are large, until at least 2012 the agricultural sector will be exempt from any tax on these emissions. There are at present no practicable ways to reduce these emissions without reducing production and the ability of our exports to compete internationally.

The agricultural sector and government have agreed to jointly fund research on methods of reducing emissions. A research strategy is co-ordinated by the Pastoral Greenhouse Gas Research Consortium, which is owned by the agricultural sector.

The strategy aims to develop safe, cost-effective technologies for reducing methane and nitrous oxide that cut emissions by at least 20 percent by 2012. Such technologies will also improve productivity.

More information: [www.climatechange.govt.nz](http://www.climatechange.govt.nz) >other-sectors/agriculture

#### **Forestry**

A strong and profitable forest industry plays a key role in reducing greenhouse gas emissions, as growing trees absorb and store carbon dioxide.

Under the Kyoto Protocol, countries have to account for the carbon stored in and released from forests. In New Zealand we are developing a carbon accounting system for this purpose.

The government will manage New Zealand's **sink credits** and the implications of taking land out of forestry at least for the first commitment period of the Kyoto Protocol. This policy allows forests

planted before 1990 to be harvested or cleared at rates higher than in the past without any cost to the forestry sector, thus retaining their flexibility in land use. The owners of forests planted since 1990 ('Kyoto Forests') will not face any liabilities when they harvest or clear their forests.

The government and the forestry sector have negotiated a package of measures and programmes to ensure the continuation of a strong and profitable forest sector. The Forest Industry Development Agenda will see the Government invest \$18.1 million to develop the sector, with a further \$3.8 million contribution from industry, between now and mid-2009.

The **permanent forest sinks initiative** will give owners of forests the sink credits for their newly established permanent forests.

More information on this initiative is available from:  
[www.maf.govt.nz/forestry/pfsi](http://www.maf.govt.nz/forestry/pfsi)

### Local government

Local government has a significant role to play in New Zealand's climate change response. Councils have regulatory powers, own local infrastructure and have responsibility for environmental management. Recognising this, the government has introduced a New Zealand Communities for Climate Protection programme. A model which has proven successful in other countries, the programme helps councils to develop inventories of greenhouse gas emissions, set targets for reducing them and devise action plans. Action can include improving energy efficiency and conservation, enhancing sustainable transport and urban design, and reducing landfill emissions. The programme monitors the reductions achieved.

More information:  
[www.climatechange.govt.nz](http://www.climatechange.govt.nz) >councils/local-govt/ccp-nz

### Individual action

Everyone can take personal action. Daily decisions about transport, waste and energy use affect the level of greenhouse gas emissions in the atmosphere. Small changes maintained over time can reduce greenhouse gas emissions. At the same time they will make our lifestyles more energy efficient and save money.

Research shows that 73 percent of New Zealanders now consider climate change to be a serious or extremely serious problem.

The *four million careful owners* programme provides information about climate change and the actions that New Zealanders can take to reduce greenhouse gas emissions.

More information:  
[www.4million.org.nz](http://www.4million.org.nz) >taking action

### Critical issues for the future

There remain significant challenges ahead in New Zealand's long-term effort to reduce emissions, particularly in the transport, electricity generation, and agriculture sectors.

With a growing economy, our demand for transport has been increasing and so greenhouse gas emissions are growing rapidly.

In the short term, New Zealand has limited ability to use non-fossil fuels to power transport. However significant potential exists for reducing our consumption of petrol and diesel by better maintaining our vehicle fleet, and shifting to vehicles that use less fuel. This has the added benefits of improving air quality and saving money on fuel. The significant extra support being provided to rail, public transport and transport demand management will also assist in curbing transport emissions.

Emissions from electricity generation are also growing quickly. Because most of our electricity has come from hydro-electric plants rather than fossil

fuels, our greenhouse gas emissions from the production of electricity have not been high on a world scale. But the growing demand for power, driven by a growing economy, has meant that we now need to rely more on gas and coal to produce electricity.

When making decisions about future sources of electricity, New Zealand will need to consider the implications for greenhouse gas emissions. The government, through the sustainable energy work programme, has been looking at the options for the future.

Agricultural methane and nitrous oxide make up nearly half of New Zealand's emissions, so will always be an important consideration. As the joint government-industry research programme begins to deliver technologies to reduce these emissions, the government and agriculture sector will need to work to facilitate their introduction.

More information:

[www.climatechange.govt.nz](http://www.climatechange.govt.nz) >other-sectors/transport

More information:

[www.med.govt.nz](http://www.med.govt.nz) >energy, resources & safety >electricity and/or environmental issues

### PREPARING FOR CLIMATE CHANGE

Research is continuing to improve our understanding of the science of climate change, its impacts on New Zealand and how best to prepare for these (sometimes described as adaptation). This provides a basis for the government to talk with the sectors and communities that are likely to be affected.

The Ministry for the Environment is assisting local councils and their communities to better understand, plan for and adapt to the effects of climate change. Technical and scientific information on the expected effects of climate change at regional and national level has been produced. Guidance is also available

on how to include consideration of climate change effects in central and local government planning and operations.

More information:

[www.climatechange.govt.nz](http://www.climatechange.govt.nz) >councils/local-govt-partnership/preparing-for-climate-change

### CONTACT US

The Ministry for the Environment's Climate Change team leads the development, co-ordination and implementation of climate change programmes and policies across central government.

Officials report to the Convenor of the Ministerial Group on Climate Change through the Ministry for the Environment's Chief Executive. Members of the Ministerial Group include the Ministers of Finance, Foreign Affairs & Trade, Environment, Energy, Research Science & Technology, Agriculture, Forestry, Transport and Local Government.

To contact the New Zealand Climate Change Office, and for more information, email: [info@climatechange.govt.nz](mailto:info@climatechange.govt.nz)



