



New Zealand's Climate Change Target

**Our contribution to the new international
climate change agreement**

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Foreword

Climate change is a truly global problem. It affects all regions, people and economies across the world. To be successful in limiting the most harmful impacts of climate change all countries need to contribute to reducing emissions.

To date, action to reduce greenhouse gas emissions across the world has not been strong enough. Countries will be meeting in Paris this December to establish a new international climate change agreement. This represents a real opportunity to deliver a response that is effective in getting all countries to act.

To underpin the agreement, each nation, including New Zealand, has been asked to consider what it can contribute to reducing greenhouse gas emissions. As a constructive and responsible global citizen, New Zealand is keen to play its part. We currently have a target to reduce emissions 5 per cent below 1990 levels by 2020 – and will be expected to table a target as part of our contribution that is more ambitious than we have committed to in the past.

While New Zealand's emissions are small on the global scale, New Zealand is already recognised as a constructive global player. We were behind the formation of the Global Research Alliance on Agricultural Greenhouse Gases, which was formally launched in 2010 and now has 45 member countries. New Zealand is also well regarded as an effective contributor within the United Nations Framework Convention on Climate Change.

But while we are committed to doing our fair share and taking responsibility for our emissions we face particular challenges, and setting an emissions reduction target will not be easy.

New Zealand already has one of the highest levels of renewable electricity generation in the world. So unlike many nations, our electricity sector has less potential to reduce emissions further.

Additionally, around half of our emissions come from the agricultural sector, which is very unusual for a developed country. Reducing emissions in this sector

is challenging given that the world needs more food – with an estimated 70 per cent more food being required by 2050 – and agriculture is key to New Zealand's economic success. As we are already a highly efficient producer, reducing total emissions from agriculture will depend on technological innovation and adopting these technologies on the farm.

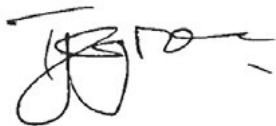
When we set our contribution, it is important the target is realistic for future governments to achieve. There are obviously major uncertainties involved in trying to frame any commitment to which a future New Zealand government would be held to account in 2030. Some of these uncertainties relate to:

- *The rules that will apply on forests and land-use change.* Given the significance of the land sector to New Zealand, these rules are particularly important to us as they can considerably affect the cost of our target.
- *Technology.* Uncertainties surrounding future technology, particularly in agriculture, will affect our ability to transition to a lower-carbon future. While we are starting to see promising opportunities, their commercial viability is not yet clear.
- *Access to international carbon markets.* It is not clear if the agreement will recognise the use of markets to meet contributions, and how they will operate. Given we have fewer low-cost options to reduce domestic emissions, emissions reductions overseas have been crucial to meeting our current targets.
- *The future international carbon price* that will affect the cost of our target.

The target we table this year will be known as an 'intended' nationally determined contribution. It will be provisional based on assumptions made about the above uncertainties. It is the Government's firm view that we need to be very clear to New Zealanders and other countries what assumptions lie behind our

'intended' contribution. We would like to hear from New Zealanders how you think we should deal with these uncertainties.

Given the international timeframe, the Government will take decisions on New Zealand's intended nationally determined contribution to the new agreement around the middle of the year. Through this consultation we want to hear your views on our international contribution to the new agreement. How we meet our target is something that we need to develop further domestically. I also intend to have a separate conversation with you about domestic policies we will then develop to achieve it.



The Honourable Tim Groser
Minister for Climate Change Issues

Introduction

In December 2015, countries will meet in Paris to establish a new international climate change agreement under the United Nations Framework Convention on Climate Change (UNFCCC).

An important part of the agreement will be the individual contributions that each country makes to address climate change. Specifically, all countries have been asked to put forward a target to reduce emissions after 2020 (eg, out to 2025 or 2030) as part of their contribution, well in advance of the Paris meeting.

Setting a target, to apply 10 to 15 years from now, is challenging given the uncertainties in the new agreement and what might be economically and technologically possible over the coming decade. It is critical that our contribution is appropriate given our national circumstances and interests and that it represents fair and ambitious action towards the global solution.

Through this consultation, we want to understand what's most important to you as we decide on our contribution. To assist your thinking, this document provides you with some context about the issues and trade-offs involved.

1. Why is New Zealand setting a climate change target?

Human impact on the climate

The earth's climate is affected by human activities like driving cars, farming, burning coal, and deforestation. These activities produce greenhouse gases – mainly carbon dioxide, methane and nitrous oxide – that build up in the atmosphere and trap the sun's heat. The climate does change naturally but greenhouse gas levels are now higher than at any time in the last 800,000 years. The climate is also changing at a more rapid rate.

On the global scale, each of the last three decades has been successively warmer than the past. As a result, we have seen the shrinking of glaciers, warmer and more frequent hot days, warmer and more acidic oceans as well as rising sea levels. If greenhouse gas emissions continue to increase at the current rate for a few more decades, we are likely to see average global temperatures warm by more than 4°C by 2100. This would have substantial environmental, economic and human impacts worldwide (see box 1 about the expected impacts on New Zealand).

Box 1.

What does climate change mean for New Zealand?

New Zealand has already warmed by about 0.9°C since 1900. Future temperature increases will depend on the level of future global emissions. Without concerted global action to reduce emissions, New Zealand's temperature is expected to rise by about 3.5°C by the end of the century.

Although we are likely to be better off than many other countries, the key risks that have been identified for New Zealand are sea level rise, flooding and wildfires. Drought is also expected to increase.

Some sectors, including forestry, farming and fishing, are especially vulnerable to the effects of climate change. These sectors are also of importance to the Māori economy.

For more information on climate change and its impacts see:

Intergovernmental Panel on Climate Change Fifth Assessment Report (IPCC):

<http://www.ipcc.ch/report/ar5/>

New Zealand's Changing Climate and Oceans: The impact of human activity and implications for the future:

<http://www.pmcsa.org.nz/wp-content/uploads/New-Zealands-Changing-Climate-and-Oceans-report.pdf>

New Zealand Climate Change Centre, IPCC Fifth Assessment Report New Zealand findings:

<http://www.nzclimatechangecentre.org/research/ipcc-fifth-assessment-report-new-zealand-findings>

Information about climate and Māori society:

www.niwa.co.nz/climate-and-maori-society

Global response

The world's nations have agreed that it would be dangerous to allow global average temperatures to rise more than 2°C above pre-industrial levels. The global goal, established in 2010, is for countries to take collective action to hold temperature increases to below this level.¹ To have a decent chance of achieving this, global emissions will need to substantially reduce (see figure 1). This will involve large scale changes in the way the world produces energy and uses land.

Climate change is a global issue requiring a truly global response. As a country that contributes only 0.15 per cent of global emissions, New Zealand will not solve climate change alone. All countries, including New Zealand, need to do their fair share.

Countries have been working collectively for over two decades through the United Nations Framework Convention on Climate Change (UNFCCC) and its Kyoto Protocol. So far, the international response has not been sufficient.

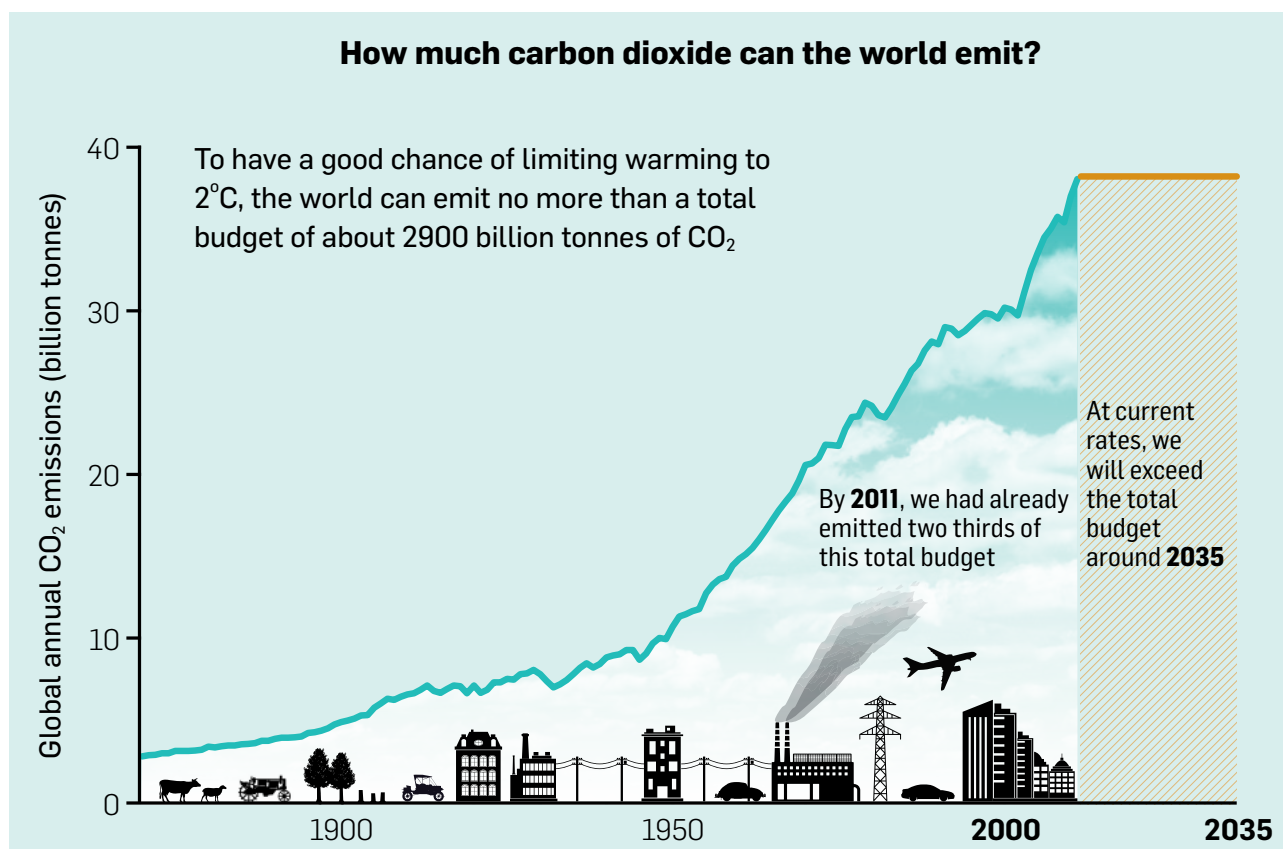
The Kyoto Protocol specifically placed legally binding commitments on developed countries to reduce their emissions, but did not require commitments from all countries. Aside from not requiring developing countries (who are now responsible for over half of global emissions) to have binding commitments, the type of commitments set were possibly more suited to countries with high fossil fuel use rather than those with large agriculture sectors. The United States never ratified the Protocol and Canada withdrew in 2011. Commitments taken under the Kyoto Protocol now cover less than 12 per cent of global emissions.

A new opportunity

The new agreement is a new opportunity. This time, the negotiations are taking a more flexible approach to incorporate a wide range of national circumstances to ensure all countries are able to come on board. Rather than prescribing what countries should do, countries are able to determine their own contributions (known as 'intended nationally determined contributions' – see box 2). The idea is that all countries will be able to participate commensurate with their capacities. At the same time, countries are expected to progress beyond their

1 <http://unfccc.int/resource/docs/2009/cop15/eng/l07.pdf>

FIGURE 1



Source: Information is sourced from the IPCC's Fifth Assessment Report, Working Group 1 (emissions data, Figure 6.8; carbon budget, SPM E.8)

current commitments – to ensure continually greater steps are being taken to reduce emissions in line with the global goal.

Momentum is building for the new agreement with the three largest global emitters – China, USA and the European Union – already signalling emission targets in support of it. New Zealand, along with other parties to the UNFCCC, has been invited to communicate its contribution prior to the agreement being concluded at the Paris Climate Change Conference in December.

It is a challenge to determine what our contribution will be before the agreement is concluded, rules are finalised, and without knowing what technological developments will occur in the future. We anticipate that detailed discussion on the rules will occur after the Paris meeting with finalised rules and guidelines to be in place before the agreement enters into force. These rules are important for New Zealand as they determine how the use of carbon markets and the land sector will count towards our target – two areas that are crucial to meeting our current targets (see box 5).

As such, our assumptions about use of markets or the land sector would need to be made clear upfront.

Box 2.

What is an ‘intended nationally determined contribution’?

The first pledge from each country towards the new agreement is currently known as its intended nationally determined contribution.

In their contributions, countries are expected to communicate the action they intend to take to reduce emissions for the period after 2020. A target to reduce emissions will be a key part of New Zealand’s contribution, but it may also outline intended supporting policies and sector specific targets.

Following the initial submission, contributions will be open for scrutiny by other countries in the period between being tabled and the Paris Climate Change Conference in December 2015.

For more information on the UNFCCC and Kyoto Protocol see:

http://unfccc.int/essential_background/items/6031.php

For a list of countries who have submitted contributions so far see:

<http://www4.unfccc.int/submissions/indc/Submission%20Pages/submissions.aspx>

Additionally, the intended nationally determined contribution that we put forward is likely to be provisional until after the details of the new agreement are finalised and rules are made clear.

Objectives for the contribution

To support decision making, we have set three key objectives for our contribution:

1. It is seen as a fair and ambitious contribution – both by international and domestic audiences

Our contribution will need to represent our fair share towards reducing global emissions, in light of our unique national circumstances (including high proportions of agricultural emissions and renewable electricity) – while also progressing beyond our previous commitments.

2. Costs and impacts on society are managed appropriately

We need to ensure that our contribution is affordable to families and businesses, and makes the most of any benefits or opportunities from reducing our emissions.

Although the distribution of costs and benefits is mostly decided by domestic policy, our target should provide us with flexibility to design our response in a way that affects different sectors fairly.

3. It must guide New Zealand over the long term in the global transition to a low emissions world

As a small open economy, New Zealand is sensitive to impacts from higher carbon or fossil fuel prices. We need to be ready for a world where the emissions intensity of our products and services becomes increasingly important to markets here and abroad.

To do this, our contribution should provide a clear signal to New Zealand businesses and households about how we intend to transition to a low emissions economy, while not impacting on the competitiveness of New Zealand businesses and displacing production (and emissions) offshore.

Q1.

- (a) Do you agree with the above objectives for our contribution?
- (b) What is most important to you?

2. What would be a fair contribution for New Zealand?

We need to think about a number of things when considering what a fair contribution for New Zealand to reducing greenhouse gas emissions would be. This includes the nature of our national circumstances and emissions profile, international and domestic expectations and rules, our previous commitments, and how we compare with other countries.

New Zealand's circumstances

Figure 2 provides a breakdown of New Zealand's emissions by sector and gas. New Zealand's greenhouse gas profile is very different from many other developed countries, which creates some unique challenges.

- We have one of the highest levels of renewable electricity generation in the world (around 80 per cent compared with the OECD average of 22 per cent²) – leaving less room to reduce emissions in this area.
- A higher proportion of our emissions are from methane and nitrous oxide from agriculture than is usual for a developed country (see box 3 on the effect of different gases). While there are currently few viable options for reducing agricultural emissions in the short term, we are a highly efficient agricultural producer by world standards.
- New forests planted since 1990 have played a key role in offsetting some of our emissions given that growing forests absorb carbon dioxide and therefore can be used to offset or cancel out other emissions. In the next 15 years much of this forest is expected to be harvested as part of normal forest management practice, meaning that these forests will no longer provide a significant carbon sink over this period.³
- Our low population density has contributed to a high per capita use of road transport.
- Our population has grown by 31 per cent since 1990, compared with the OECD average of 18 per cent. Continued growth may place upward pressure on our emissions.

Box 3.

What is the effect of different gases on climate change?

The main gases that contribute to global climate change are:

- carbon dioxide
- methane
- nitrous oxide
- synthetic greenhouse gases (including hydrofluorocarbons, perfluorocarbons, and sulphur hexafluoride).

Each of these gases has a different ability to trap heat. The length of time a gas remains in the atmosphere also varies. This is why different gases have different effects on climate change.

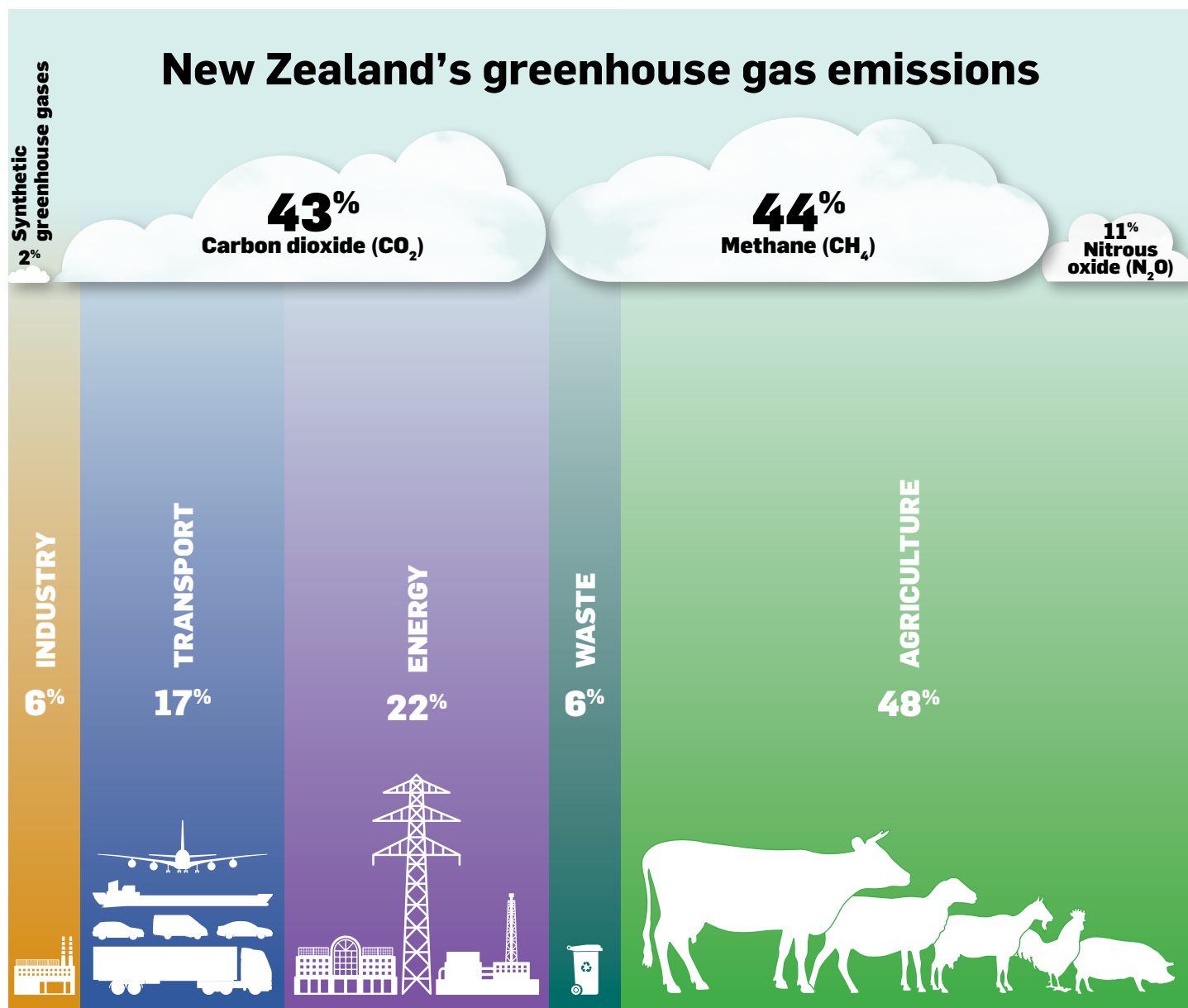
While carbon dioxide traps less heat than methane over the short term, it has a lasting impact on temperature rise because it remains in the atmosphere for a long time. Methane is much more effective at trapping heat but has a relatively short lifetime in the atmosphere (around 12 years). The Intergovernmental Panel on Climate Change notes that *“reducing the emissions of short-lived climate forcing agents [including methane]... will have only a limited effect on long-term warming, which is driven mainly by carbon dioxide” (IPCC AR5 Synthesis report 2014).*

Overall, due to our national circumstances, New Zealand has fewer low-cost options to reduce our domestic emissions compared with other developed countries.

² Note this figure does not count nuclear power as a renewable energy source.

³ New Zealand forests will go through planting and harvesting cycles that impact on emissions over time. Under the new agreement, it may be possible for New Zealand to apply accounting approaches (or rules) that more effectively address this fluctuation in emissions and removals over time.

FIGURE 2



Source: New Zealand's Greenhouse Gas Inventory for the year 2013. Emissions from forestry are not included in the estimate of total emissions. Percentages may not add up to 100 due to rounding.

For more information about New Zealand's emissions and targets see:

New Zealand's Sixth National Communication under the UNFCCC and Kyoto Protocol:

<http://www.mfe.govt.nz/publications/climate-change/new-zealands-sixth-national-communication-under-united-nations-framework>

New Zealand's Greenhouse Gas Inventory 1990-2013:

<http://www.mfe.govt.nz/publications/climate-change/new-zealands-greenhouse-gas-inventory-1990-2013>

New Zealand climate change targets:

<http://www.climatechange.govt.nz/reducing-our-emissions/targets.html>

New Zealand's emissions and targets

To demonstrate progress under the new agreement, New Zealand is expected to put forward a target that is more ambitious than our current target of 5 per cent below 1990 levels by 2020 – across all of our emissions.

Given that around 65 per cent of New Zealand's emissions come from transport and agriculture, reducing our total emissions is a significant challenge.

In time, advancements in low emissions technology in agriculture may help but we are not there yet (see box 4).

Since 1990, New Zealand's total greenhouse gas emissions have grown by about 21 per cent, along with our population and economic growth. The sources that contributed most to this increase were carbon dioxide emissions from road transport, as well as nitrous oxide and methane emissions from agriculture.

Despite the growth in total emissions, New Zealand is on track to meet its current 2020 target through a mix of

Box 4.

What are we doing to reduce agricultural emissions?

As a developed country, New Zealand is unique in that around half of our emissions come from agriculture and we produce considerably more food than our small population consumes.

The food we produce from agriculture is important. Not only is it a critical part of our economy, food security is a major global issue – with an estimated 70 per cent more food needed by 2050. Therefore, when addressing agricultural emissions, the key is to develop technologies and farming practices that can both increase food production and decrease emissions, as well as ensuring that efficient production in New Zealand is not replaced by inefficient production offshore.

In 2008, the Government proposed a new global climate change initiative – the Global Research Alliance on Agricultural Greenhouse Gases (GRA). The GRA now has 45 member countries and seven international partner organisations to address scientific and practical issues in this field.

The Government has committed \$45 million to the GRA out to June 2019. This investment is complemented by the work of the New Zealand Agricultural Greenhouse Gas Research Centre and the Pastoral Greenhouse Gas Research Consortium (a partnership between pastoral industries and the Government). This investment has identified a number of possible solutions including:

- identifying sheep and cattle that emit less methane due to their genetic makeup
- improved feed that results in fewer emissions
- a vaccine or inhibitor to reduce methane emissions from animals
- better nitrogen management including nitrogen inhibitors
- increasing the amount of carbon stored in soils.

These solutions have exciting potential, but research needs to continue to realise it. For example, while a vaccine to reduce methane emissions is being developed, significant further work is required before it could be ready for the market. Scientists estimate that some of these technologies may become commercially available over the next 10 to 20 years. As this occurs, the Government and the sector will need to consider how best to facilitate their adoption.

While this comprehensive research is taking place, New Zealand farmers have been successful in reducing the emissions intensity of our agriculture – that is, the emissions generated per unit of meat or milk – by about 1 per cent per year since 1990. This has been achieved through better feed and animal management practices, improved genetics and soil fertility.

Because reducing emissions produced 'on farm' by livestock (sometimes called 'biological emissions') is reliant on the discovery, development and adoption of new mitigation technologies – biological emissions do not currently face a price in the New Zealand Emissions Trading Scheme.⁴ New Zealand is a relatively efficient agricultural producer compared to other countries. As no other country has yet put a direct carbon price on farmers, such a price could potentially displace agricultural production in New Zealand with less efficient farming in other countries.

⁴ Agricultural processing companies do face a price through obligations on their fuel supplier.

reducing domestic emissions, use of forestry sinks, and recognising a surplus of emission reduction units from our first target under the Kyoto Protocol.

Forestry has played an important role in meeting our targets. We have also been able to purchase emission reduction units through international carbon markets to offset our emissions (see box 5). It is up to individual countries making their contribution to decide on the appropriate balance between domestic action and international purchasing to supplement it.

Box 5.

Use of carbon offsets and forestry sinks to meet targets

As greenhouse emissions merge in the atmosphere and have a 'global effect', it doesn't matter where in the world emissions reduce – only that they do so overall.

On this basis, international agreements have been designed so that countries can purchase reductions (or 'offset' their emissions) from other countries through the use of international carbon markets, for example, supporting projects to reduce emissions overseas. In addition, agreements have sought to encourage forestry and discourage deforestation – given the ability of forest sinks to absorb carbon from the atmosphere.

Both of these concepts make economic and environmental sense – particularly for countries like New Zealand with circumstances that make it difficult to reduce emissions at home. For the same cost it is possible to reduce more emissions by purchasing international units from overseas, or by planting new forests, than by reducing domestic emissions. In addition, it can help to support countries with less financial capacity to invest in new clean technologies.

Nevertheless, there are also some downsides to meeting our emissions targets by using international offsets. In particular, the co-benefits from the emission reduction projects are felt offshore.

We can help to ensure that the use of forestry and purchasing amounts to real, additional, and permanent reductions in global emissions through the rules and processes that have been developed (and will continue to develop) under the international agreements. Rules that provide the right incentives to maximise carbon sinks and smooth out the fluctuations of planting and harvesting cycles will be critical as will an agreement that affirms the use of international markets. Making headway in both these critical areas is proving difficult and it is not clear when they will be resolved.

Comparison with others

When we table New Zealand's contribution, other countries are likely to assess whether it represents a 'fair' contribution to the global effort. As countries have different circumstances (or capacities to reduce emissions), the effort required to achieve the same level of emissions reductions varies significantly from country to country.

There are also expectations that certain countries *should* do more than others (eg, those with higher emissions per person, or higher income) and that developed countries should show leadership.

Consequently the level of target that is 'fair' will be different for every country. There are a number of factors that can help us work out what may be fair. Some examples are provided below.

- **Greenhouse gas emissions per person**

New Zealand's annual greenhouse gas emissions per person are around 17 tonnes compared to the global average of around 8 tonnes. This reflects the fact that we are a developed (and relatively wealthy) country, and have one of the highest agricultural emissions per person in the world.

- **Carbon dioxide emissions per person**

Our carbon dioxide emissions (ie, not including methane or other gases) per capita are lower than other developed countries, particularly in comparison with Australia and the United States. This is important given that the Intergovernmental Panel on Climate Change (IPCC) notes that carbon dioxide is the main driver of global temperature rise over the long term (see box 3).

- **National circumstances/cost**

If all countries took on the same level of cost this would result in different levels of target in each country. While it is difficult to estimate precisely, because of our national circumstances (including economy, population growth and emissions profile), for the same level of cost as the European Union's target,⁵ New Zealand's target would be approximately 10 to 20 per cent *above* 1990 levels.

⁵ The European Union has a target of reducing greenhouse gas emissions by 40 per cent below 1990 levels by 2030, and the United States has a target of reducing greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2025. The comparison between countries excludes the effect of forestry emissions and removals.

For the same level of cost as the United States' target, New Zealand's target would be between 15 per cent above 1990 levels to 10 per cent *below* 1990 levels. Part of this is due to our high levels of agricultural emissions and renewable electricity.

We will need to balance all these factors when considering our target.

Q2.

What do you think the nature of New Zealand's emissions and economy means for the level of target that we set?

3. How will our contribution affect New Zealanders?

Cost of the target

Our target is likely to be met through a mix of reducing domestic emissions, establishing new forests and through using international carbon markets.

The actual cost of our target will depend on:

- the level of reduction we commit to
- whether we can access international carbon markets (see box 6)
- the availability of new technology giving us lower-cost options to reduce emissions
- the rules of the new agreement
- the future international carbon price (see box 7)
- what policies we put in place to meet our target.

Given this uncertainty, setting a target will require careful consideration about the extent of action we can take to reduce emissions while managing affordability of the target for future governments.

Box 6.

Using international carbon markets

International carbon markets mean we can fund emission reduction projects overseas and use this to count towards our overall target.

We are likely to need international carbon market access to help meet our target. Our modelling suggests that meeting targets solely through domestic emissions reductions will increase the cost. This means that it will be important to secure the use of carbon markets in the new agreement.

Box 7.

The price of carbon

Modelling collated by the Intergovernmental Panel on Climate Change estimates that to drive sufficient global action to limit warming to 2°C, global carbon prices need to be in the range of \$60-\$200 NZD per tonne by 2030.

How will our target affect the economy?

The New Zealand economy is projected to grow between now and 2030. Setting an international target means the economy will grow more slowly than it otherwise would. For example, with no target for after 2020, New Zealand's national income is projected to grow from 2014 levels of \$220 billion to around \$299 billion in 2027. If New Zealand took a target of 5 per cent below 1990 levels by 2030, in line with its 2020 target, then national income in 2027 could be \$3.5 billion less (\$295.5 billion).⁶

More ambitious targets will have a higher cost. For example, if New Zealand took a target of 10 per cent below 1990, then the cost of New Zealand's target could increase by an additional \$200 million per annum. For a target of 20 per cent below 1990, then the increase in cost could be an additional \$500 million or more.

How the impacts of our target are distributed across sectors of the economy and businesses depends on the domestic policies implemented to achieve it.

6 2027 is used to demonstrate annual costs in a representative year. Calculations are based on modelling by Infometrics.

How will our target affect households?

Households and families will be affected in two main ways. Firstly, wages will grow more slowly, in line with the overall economy. Secondly, the price of some goods and services will be higher (eg, electricity and vehicle fuel). These effects decrease the amount of 'household consumption' possible, ie, the average household will be less 'well-off' than what would be expected without a target.

Average household consumption is currently around \$73,000 per annum. It will continue to rise, but growth will be slower with deeper emissions targets. For example, continuing with the current target of 5 per cent below 1990 levels by 2030 means that in 2027, an average New Zealand household would be around \$1,270 per annum worse off in terms of household consumption than if no target were taken.

More ambitious targets will have a higher cost to households. Taking a target of 10 per cent below 1990 could increase the cost to households by around a further \$30 per annum, and a target of 20 per cent below 1990 could increase the cost by around a further \$130 per annum (versus a 5 per cent target). How the impacts are distributed across different income groups would depend on domestic policies implemented to achieve the target.

TABLE 1: Impact of different targets on annual household consumption in 2027 (based on a \$50 per tonne carbon price)

Target	Impact (reduction in consumption for different targets)
5% below 1990	-\$1,270 per annum ⁷
10% below 1990	-\$1,300 per annum
20% below 1990	-\$1,400 per annum
30% below 1990	-\$1,600 per annum
40% below 1990	-\$1,800 per annum
Average annual consumption per household in 2027 if no target were taken	\$85,000

⁷ Cost figures are modelling estimates only. This means that they are not accurate to tens of dollars and are rounded to hundreds of dollars. However, the cost to households for a 5 per cent target is given to a ten dollar precision to show its size relative to the 10 per cent target.

Box 8.

Why is there a cost for maintaining current target levels (5 per cent below 1990)?

New Zealand's gross emissions are currently around 21 per cent above 1990 levels and will be around 36 per cent above 1990 under 'business as usual' projections. This means the bulk of effort required for a given target is to bring emissions back to 1990 levels.

Why do costs increase more rapidly as targets become more ambitious?

Costs increase more rapidly for greater reductions from 1990 levels. The additional emissions reductions for these targets would almost certainly need to be met by buying international carbon offsets from overseas, which has negative flow-on effects for the economy. The flow-on effects become greater for each additional unit purchased.

Q3.

What level of cost is appropriate for New Zealand to reduce its greenhouse gas emissions? For example, what would be a reasonable reduction in annual household consumption?

New opportunities

While we will face costs meeting our target, reducing our emissions can also contribute to immediate and longer-term benefits. Some examples are provided below.

- Fuel and energy efficiency can reduce costs to businesses and households.
- Our high level of renewable electricity generation creates opportunities, including greater use of renewables in other sectors, through the use of new technology (for example, use of electric vehicles in transport – see box 9).
- A transition to a low-carbon economy leads to greater energy security and limits our vulnerability to oil price volatility, supply disruptions and potentially high future carbon prices.
- Reducing greenhouse gas emissions and increasing forest sinks can lead to improved health, environmental and social well-being, and improved erosion control and water quality.
- Remaining aligned with the global transition to a lower-carbon economy will ensure we remain competitive and productive in a world where the emissions intensity of our products and services will increasingly be an issue.

If New Zealanders respond to the opportunities from new technologies (where technologies are available) we may see significant reductions in our carbon dioxide emissions. For example, some leading New Zealand companies are already moving to electric vehicles as part of their fleet purchasing decisions. Nevertheless, it is difficult to predict what effect such take up of new technology will have on our emissions over time.

Box 9.

Emerging technologies to reduce transport emissions

Reducing transport emissions will require a range of measures including changes in vehicle use. This might include increased use of public transport, walking and biking, and emerging technologies. Advances in electric vehicle and biofuel technology offer potential to reduce emissions in the transport sector over the long term, while supporting New Zealand's economic growth.

Electric vehicle technology is advancing quickly. The costs are expected to decrease in the next decade. New Zealand is well placed for the uptake of electric vehicles with enough renewable electricity generation capacity to meet the extra energy demand. In addition, the standard 230 volt power supply in New Zealand homes is suitable for charging electric vehicles overnight.

Biofuel technology is also emerging and could provide an alternative fuel source to oil. It can be manufactured from inedible tallow and whey, a range of crops, and woody biomass from forestry and forest waste. Much of the existing vehicle fleet can already use biofuel blends. Biofuel technology could be an option for long distance travel and to reduce emissions as the light vehicle fleet transitions to electric technology. Depending on the scale of production, there may also be potential to export biofuels overseas.

Q4 .

Of these opportunities which do you think are the most likely to occur, or be most important for New Zealand?

For information on how businesses are benefiting from reducing their emissions see carboNZero programme case studies at:

<https://www.carbonzero.co.nz/why/casestudies.asp>

For more information on New Zealand's transition to a low-carbon economy see New Zealand's Business Growth Agenda:

<http://www.mbie.govt.nz/pdf-library/what-we-do/business-growth-agenda/bga-reports/BGA-Natural-Resources-report-December-2012.pdf>

Domestic policies to meet our target

This consultation is about our international target, or contribution, to the new climate change agreement. The next step will be to determine what domestic policies and measures we should put in place to meet it.

To date, our key policy tool for reducing emissions is the New Zealand Emissions Trading Scheme (NZ ETS). This puts a price on each tonne of greenhouse gas emitted.

Other measures include:

- increasing renewable electricity generation to 90 per cent by 2025
- encouraging and supporting permanent afforestation such as through the Permanent Forest Sink Initiative
- investing approximately \$10 million annually in research for new agricultural mitigation technologies through the Pastoral Greenhouse Gas Research Consortium and the New Zealand Agricultural Greenhouse Gas Research Centre
- exempting electric vehicles from road user charges until 2020
- introducing a fuel economy labelling scheme for vehicles
- investing \$42 million in biofuel research.

As the costs and benefits of addressing climate change have the potential to affect certain sectors unevenly, we will need to manage policies so adjustments are smooth and impacts are fair on different sectors and households.

We intend to work with you further to develop any policies that could be set. As a first step, this year we will start to consider how the current settings under the New Zealand Emissions Trading Scheme are placed to deliver on our target.

Summary

As described throughout this document, there are many factors to consider when deciding what may be an appropriate target for New Zealand. We'll need to think about:

- how our target compares with previous targets
- how we compare with other countries
- our national circumstances and what's best for us
- impacts and costs on the economy
- the rules of the new agreement (particularly on markets and land use)
- availability of new technologies
- the speed of the global transition to a low emissions world.

Predicting what we can achieve to reduce emissions 10 to 15 years from now, and what technology will be available, is a significant challenge. Nevertheless, continuing rapid technological change seems highly likely and how New Zealanders respond to new technology will be crucial.

While we may be optimistic on some fronts, such as the development of technology in transport, achieving major breakthroughs in reducing agricultural emissions is likely to be harder. Agriculture is our hardest problem to address. It makes up around 50 per cent of New Zealand's emissions and reducing emissions in this sector is very difficult without affecting production.

With our significant investment in research on reducing agricultural emissions (see box 4), we may see important breakthroughs enter the commercial market in future years. But with uncertainty about what technological breakthroughs may eventuate, we need to carefully consider how to take this uncertainty into account when setting our target.

We need to ensure that our target is considered fair and ambitious (including progressing upon our previous targets). But we also need to ensure the

costs for New Zealand are fair compared with what other countries are doing. Doing more than our fair share would also impact the competitiveness of New Zealand businesses and place unnecessary costs on households.

The timeframe for the new agreement requires us, along with other governments, to give some indication towards the middle of this year of what we might be able to commit to up to 2030. As it is an 'intended' nationally determined contribution our target will be provisional before the agreement is finalised and rules are confirmed.

When we set our contribution, we need to be very clear both to New Zealanders and other countries about the assumptions that sit behind our contribution and the importance of technological advancements. Given that we have fewer low-cost opportunities to reduce domestic emissions, these assumptions are more important to us than many other developed countries.

We see this consultation as part of an ongoing conversation with you about our climate change response. Changes to our domestic policies are likely to be needed to give effect to the new agreement and ensure we are able to meet our target. This is something we will need to develop with you over time.

Q5.

How should New Zealand take into account the future uncertainties of technologies and costs when setting its target?

How to make a submission

Preparing your submission

Your submission may address any aspect of the discussion document, but we would appreciate you paying particular attention to the questions posed throughout. You may answer some or all of the questions. To ensure your point of view is clearly understood, you should explain your rationale and provide supporting evidence where appropriate.

There are three ways you can make a submission:

- Use our online submission tool, available at www.mfe.govt.nz/more/consultations.
- Download a copy of the submission form to complete and return to us. This is available at www.mfe.govt.nz/climate/consultation. If you do not have access to a computer we can post or fax a copy of the submission form to you.
- Write your own submission.

If you are posting your submission, send it to Climate Change Consultation Contribution, Ministry for the Environment, PO Box 10362, Wellington 6143 and include:

- the title of the consultation (Climate Change Contribution Consultation)
- your name or organisation name
- postal address
- telephone number
- email address.

If you are emailing your submission, send it to climate.contribution@mfe.govt.nz as a:

- PDF, or
- Microsoft Word document (2003 or later version).

**Submissions close at 5.00pm on
Wednesday 3 June 2015.**

Publishing and releasing submissions

All or part of any written submission (including names of submitters), may be published on the Ministry for the Environment's website www.mfe.govt.nz. Unless you clearly specify otherwise in your submission, we will consider that you have consented to website posting of both your submission and your name.

Contents of submissions may be released to the public under the Official Information Act 1982 following requests to the Ministry for the Environment (including via email). Please advise if you have any objection to the release of any information contained in a submission and, in particular, which part(s) you consider should be withheld, together with the reason(s) for withholding the information. We will take into account all such objections when responding to requests for copies of, and information on, submissions to this document under the Official Information Act.

The Privacy Act 1993 applies certain principles about the collection, use and disclosure of information about individuals by various agencies, including the Ministry for the Environment. It governs access by individuals to information about themselves held by agencies. Any personal information you supply to the Ministry in the course of making a submission will be used by the Ministry only in relation to the matters covered by this document. Please clearly indicate in your submission if you do not wish your name to be included in any summary of submissions that the Ministry may publish.

What happens after the submission period?

After receiving submissions, the Ministry will evaluate them and may, where necessary, seek further comments. Your submission will contribute to advice to Ministers.

Contact for queries and lodging submissions

Please direct any queries to:

Phone: 0800 678 345

Email: climate.contribution@mfe.govt.nz

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